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THE IRON TRADE REVIEW

VOLUME XXXI. CLEVELAND, O. MARCH 31, 1898. CHICAGO, ILL. NUMBER 13

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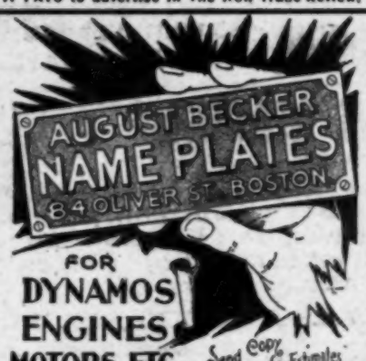

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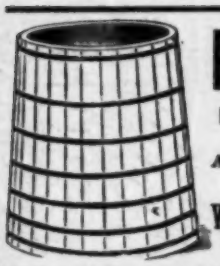

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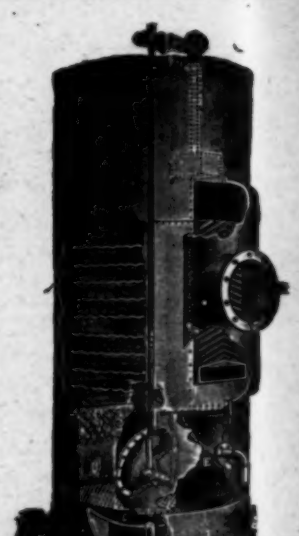

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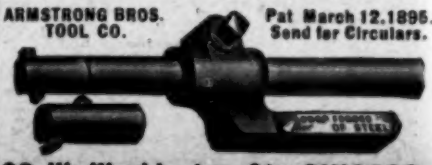

98 W. Washington St., CHICAGO.

THE IRON TRADE REVIEW

VOLUME XXXI. CLEVELAND, O. MARCH 31, 1898. CHICAGO, ILL. NUMBER 13

THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

The alternation of war and peace news in the past week has been much alike to the iron trade. Just the extent to which war possibilities are holding back new undertakings it would be difficult to judge, but business goes on at a tremendous rate, and if much is being deferred, the missing factor may be charged with the failure of prices to advance. Certainly there can be little complaint with the amount that is being done, as it is. War plans do not deter the trade from contracting freely. Ore contracts, which are longest-lived of all—those now being made lasting to May 1, 1899—have been large beyond record. It is estimated that 8,500,000 tons of Lake Superior ores, to be shipped in 1898, are already taken up, either in sales, or in the schedules of consumers having their own mines. There is no chance of an agreement on Mesabi ores this year, and no real expectation of such an agreement has existed from the beginning. Pig iron producers are beginning to feel the effect of the tremendous production, that has been increasing month by month since June of last year. Current sales are much below shipments, but the rate at which foundries, mills and steel works are using up pig iron is bringing on the buying time apace. The Alabama and Tennessee furnaces that are parties to the recent agreement are holding to their prices, and are doing business in a small way; the outsiders are making concessions as heretofore and get most of the little that is going. Exports from Alabama furnaces have been lighter since the first of the year than in the preceding quarter, and the difference will be felt if the present contraction of shipments continues long. Central Western furnacemen producing Bessemer iron have conferred long and seriously, but formal organization is still deferred. The provisional arrangement as to prices exists, however, and $9.75, valley furnace, for prompt shipment, and $10 for second quarter, will be maintained through April. Meantime the developments of the situation will determine whether more stringent methods shall be employed. The suggestion of a general 30 days banking has in it the most effectual remedy for the trouble, and involves none of the uncertainties that attach to the keeping of "gentlemen's agreements. However, that is a procedure to which unanimous consent has never yet been secured, and probably will not be now. The output of steel mills holds up at a strong pace. Billet and tin plate and sheet bar sales insure full operation for the next three months, and the $15.50 billet basis is maintained in recent business. Structural mills East and West are busier and a good tonnage is ahead, unless war intervenes. Shipyard work is showing more activity in the Central West than is usual at this time of year, and car and locomotive demand is developing in a very satisfactory way. More Government contracts were let the past week, and the number of plants feeling their impetus is increasing. Steel casting works and foundries in general are running quite full, giving the best proof that could be had of the general distribution of work and the far-reaching extent of the prosperity felt in iron and steel works. There is nothing in current business in all metal working lines to indicate that the country is seriously disturbed over the complications with Spain, in spite of the ease with which peace may be broken.

PITTSBURG.

OFFICE OF *The Iron Trade Review and Industrial World.*
807 TRADESMEN'S BUILDING, March 30.

An agreement was reached by the pig iron interests during the week, and a committee is now arranging details of the scheme, but definite action is postponed for 30 days. Bessemer iron is established, temporarily at least, on a basis of $10 at valley furnace, for second quarter, and all the valley furnaces are to join in the movement. The high water the past week interfered some with operations at finishing mills located near the rivers, but most of them are again in operation and keeping up the tremendous tonnage records they have been making since Jan. 1.

PIG IRON.—The Cleveland meeting of valley furnacemen last week resulted in a temporary understanding at least, and while a committee of five is wrestling with the details of the combination, pig iron prices are to be continued at $10, furnace, and $10.10, Youngstown and New Castle, and $10.65, Pittsburg, Cleveland and Lorain, for April, May and June. Notwithstanding this prospect of higher prices, both gray forge and foundry irons have been more active than Bessemer. There is still Bessemer iron to be had from second hands at $9.65 and $9.75, for early shipment, but it is not wanted. Gray forge is higher in Pittsburg and much higher in the valley. Pittsburg sales at $9.15 and $9.25 are reported, while in the valleys $8.85 was done on more than one transaction. Foundries are buying more actively, and sales of No. 2 are reported at from $10 to $10.25. A 1,000-ton lot of extra No. 2 netted $10.25. Quotations in Pittsburg are as follows:

Bessemer, valley	$ 9.75 to 10.00
Bessemer, Pittsburg	10.40 to 10.65
No. 1 Foundry	10.40 to 10.50
No. 2 Foundry	10.00 to 10.25
No. 3 Foundry	9.50 to 9.75
Gray Forge, valley	8.75 to 8.85
Gray Forge, Pittsburg	9.25

BILLETS.—A good tonnage of billets is reported sold at $15.50, delivered in Pittsburg. Wheeling district quotations are still relatively below prices at Pittsburg, owing to the sold-up condition of Pittsburg mills. Quotations are $15 and $15.25 maker's mill, Wheeling, and $15.50 maker's mill, Pittsburg.

SHEET BARS.—An inquiry for several thousand tons of sheet bars that is current indicates that some wants are unsupplied, notwithstanding the recent heavy selling. There has been little selling in the week and hence no return of low prices. Mills quote $16.75 and $17 maker's mill, Wheeling, and $17.25 maker's mill, Pittsburg.

RODS.—Rods are selling at $22.50 and $23.

PIPES AND TUBES.—Further gas and oil projects are discussed, and a heavy tonnage will be called for if any considerable portion of work now planned comes to a head. As it is, the complaint of sellers is rather against prices prevailing than the volume of orders. Most of the mills are busy. Base discounts are as follows: Butt weld, black, 57 per cent off; lap weld, black, 67 per cent off; butt weld, galvanized, 50 per cent off; lap weld, galvanized, 55 per cent off. The additional discounts are 6 tens and 5 per cent on small lots and 6 tens and 7½ per cent on attractive orders. Discounts on merchant boiler tubes are as follows: 2¼ inch and smaller, 72½ per cent off; 2½ inch and larger, 75 per cent off.

PLATES.—Mills quote: Tank, Bessemer and open-hearth, 1c; shell, 1.10c; flange, 1.20c; fire-box, 2c.

RAILS AND TRACK MATERIAL.—Rails are quoted at $18, Pittsburg. On track material we continue to quote as follows: Iron track bolts, 1.65c to 1 70c; steel spikes, 1.45c to 1.55c; splice bars, 1.10c to 1.15c; links and pins, 1.20c.

IRON AND STEEL SKELP.—Skelp is quoted: Grooved steel skelp, 90c to 95c; sheared steel skelp, 1c to 1.05c; grooved iron skelp, 1.05c to 1.10c; sheared iron skelp, 1.12½c to 1.15c, four months f. o. b. buyer's mill, or 2 per cent off for cash.

STRUCTURAL MATERIAL.—There are further assurances that spring work has opened and that buying has begun. Mails are heavy and estimates are as a rule asked for. Locally some work has come to a head. The Schultz Bridge & Iron Co. has been awarded the contract for the new train shed of the Pittsburg & Lake Erie Railway and 900 tons of shapes are involved. Bids have been closed on the Government piers at Dry Tortugas and Key West and the Union Bridge Co. gets the work. Over 1,000 tons of steel piles alone are needed. The total tonnage is large. The agreed prices on shapes follow: Beams and channels, 3 to 15 inches, 1.15c; 18 to 24 inches, 1.25c; angles, 1c; tees, 1.20c; and zees, 1.15c. Universal plates are still high. In connection with other shapes they are selling at 1c to 1.05c; alone, 1.10c.

SHEETS.—Few buyers are now asking for sheets except those wanting to cover for the last six months. Prompt orders are quoted 1.95c and 2c for No. 28 and lower prices are again rumored. As a rule the mills are refusing to sell through next fall. Galvanized sheets are in better demand but no higher—80 and 5 and 80 and 7½ per cent off list.

FERRO-MANGANESE.—Domestic, 80 per cent, is reported scarce. Prices asked are $47 and $47.50, with higher prices for immediate shipments.

SPELTER.—Spelter is quiet again at $4.10 and $4.12½.

BARS.—Steel bars show the first strength for some weeks. A check in cutting prices is on for the present and steel bars are firm at 95c and 1c—quotations of different mills. Valley common bar iron is quoted at 95c; best muck bar branded, 1.25c.

OLD MATERIAL.—Iron rails have sold under pressure during the week at $13.75 and steel rails at $10 and $10.25. Both are weak. Car wheels are $10.25, gross; wrought scrap, $11.50, net; cast scrap, $9, gross; wrought turnings, $7, net. Other prices are: Coil spring, $11.25; heavy melting stock, $10.50; cast borings, $6.25; heavy busheling scrap, $9.75; crop ends, billets and blooms, run of mill, $11.

CHICAGO.

OFFICE OF *The Iron Trade Review and Industrial World.*
1142 MONADNOCK BLOCK, March 30.

Railroad buying continues to be larger than that from other sources in this market, although a considerable business was done with the general trade. Car builders are figuring on large lots of cars for the Western roads, new business in the market this week aggregating over 5,000 cars, besides several lots that have been figured on recently and have not yet been placed. Only one order of any size, for 1,000 cars, was given out. The local mills took an order for 4,000 tons of heavy rails for Canada last week, but other business, except in light sections, was small. Good orders for structural material were received, nearly all of them calling for comparatively small amounts, but making a large total. The country business in this line is especially good. The bids for the Chicago post-office job, which is expected to take about 10,000 tons, will be opened next Monday, and it is thought the contract will be let soon after. The contract for the eight-track bridge over the Chicago Drainage Canal, let to the King Bridge Co., of Cleveland, some time ago, and taking about 8,000 tons of material, was cancelled last week, because of the objections of the railroads which will use the bridge to having one so large. This work will be re-advertised, and it is probable several narrow bridges will be built.

PIG IRON.—Business with most of the furnaces was quiet. Two good sales were made—one for 1,500 tons of Northern iron and one for 1,000 tons of Southern iron, but other business was nearly all confined to small lots. A number of good inquiries are in the market and as consumers are taking and using their iron as fast as the furnaces can get it to them there is every prospect of a large business for a considerable time into the future. The foundries in this territory are nearly all working full time, and most of them are melting to their capacity. Prices on Northern irons are very firm, and Southern furnaces out of the combination appear to have satisfied their desire for business to some extent, so that they are asking higher prices for their products than was the case two and three weeks ago. They have not yet reached the mark set by the association, however, and continue to do the larger part of the business that is going to the South. Lake Superior charcoal iron is selling in small lots, and most of the sales have been made at about the figures we quote. Prices on iron are made as follows:

Lake Sup. Charcoal	$12 00@12 50	South'n Coke No. 3	$10 10@10 35
Local Coke Fdy. No. 1	11 50@12 00	Southern No. 1 Soft	10 60@10 85
Local Coke Fdy. No. 2	11 00@11 50	Southern No. 2 Soft	10 35@10 60
Local Coke Fdy. No. 3	10 75@11 00	South'n Silveries	11 25@11 50
Local Scotch Fdy. No. 1	11 50@12 00	Jackson Co. Silveries	12 50@14 50
Local Scotch Fdy. No. 2	11 00@11 50	Ohio Strong Softeners	13 00@13 25
Local Scotch Fdy. No. 3	10 75@11 00	Alabama Car Wheel	14 00@16 00
South'n Coke No. 1	10 60@10 85	Malleable Bessemer	10 75@11 00
South'n Coke No. 2	10 35@10 60	Coke Bessemer	11 50@12 00

BARS.—Considerable business is being done, quite a large part of it in round lots. Three or four contracts for large tonnage were placed last week, and the demand appears to be keeping up at a steady pace. The market is firming up a little, although the slight advances made are confined to a few mills who have satisfied their needs in the way of orders. Quotations are made at 1.05c to 1.10c for common iron; 1.10c to 1.15c for guaranteed, and 1.15c to 1.20c for soft steel bars from strictly billet stock.

CAR ORDERS.—Only one large contract was placed in this market last week, the Great Northern having bought 1,000 cars. Several of smaller size were given out. Besides the inquiries mentioned last week, requests for bids on 1,225 cars have been sent out by the Houston & Texas Central, and the Pennsylvania system is reported to be in the market for from 4,000 to 5,000 cars. Car material is in good demand, and orders are frequent and of good size. One mill took a contract for 1,000 tons of car axle billets last week.

RAILS AND TRACK SUPPLIES.—The Illinois Steel Co. received an order for 4,000 tons of 72 lb. rails to go to Canada, last week, and for about 1,000 tons of other heavy section rails, in various sized lots. The demand for light section rails has been good, and quite large sales are made every week. Quotations are as follows: Rails, $20 to $22.50, according to specifications; steel splice bars, 1.20c to 1.30c; track bolts, with square nuts, 1.80c to 1.90c; hexagon nuts, 1.90c to 2c; spikes, 1.60c to 1.65c.

BILLETS AND RODS.—The local mills, being full of orders, are taking very little business. Eastern mills have made considerable sales in the week, of both billets and rods, at $17.25 and $23.75, respectively.

STRUCTURAL MATERIAL.—Two large orders are in sight, one, the Chicago post office job, taking about 10,000 tons, to be let next week, and the other, the re-advertised Drainage Canal bridge, calling for about 8,000 tons, to come up in the near future. The latter is the eight track bridge which was let to the King Bridge Co., of Cleveland, some time ago, and to which the railroads which are to use it entered such serious objections that is to be relet; this time it is figured to be built in sections instead of as one large bridge. General business in small lots, particularly from the country trade, is very good, and makes a large total every week. Quotations are made as follows: Beams, 15-inch and under 1.30c to 1.35c; 18, 20 and 24-inch, 1.40c to 1.45c; angles, 1.15c to 1.25c; plates, 1.10c to 1.15c; tees, 1.35c to 1.40c. Small lots from stock are quoted at one-quarter to one-half cent higher.

PLATES.—The local mills secured an order from the Chicago Shipbuilding Co. for about 3,000 tons of ship plates last week. Other business included an order of 700 tons of tank plates, and several of smaller size. Business, both from mills and store, in small lots, is very good, and the indications are that it will continue so. Quotations are unchanged. They are as follows: Tank steel, 1.10 cto 1.15c; flange steel, 1.40c to 1.45c; fire box steel, 1.85c to 5c.

MERCHANT STEEL.—Business with the local dealers has been very good. Several good season's contracts were placed last week, and other business ran into a large tonnage. The demand appears to increase every week. Prices follow: Open hearth spring, tire and machinery steel, 1.65c to 1.75c; smooth finished machinery steel, 1.60c to 1.65c; smooth finished tire, 1.45c to 1.50c; tool steel, 5.50c to 7.50c; specials, 11c and upwards.

SHEETS.—Considerable transactions were closed last week, making a very good total. Most of the business was done in small lots, but included in the week's business were several orders for large amounts. The demand indicates a continuance of the good business. Quotations are made at 2.05c to 2.15c for No. 27 black, and 80 and 7½ to 80 and 5 per cent discount for galvanized.

SCRAP.— An order of 500 tons of old iron rails was taken in this market last week, to go East, netting the seller a little less than $12.50 here. This was probably better than could be done in this market. A sale of 500 tons of cast scrap to one of the local foundries was made, at $8.75. Other business included an order for 350 tons of iron rails, and one for several hundred tons of steel rails, short lengths. Cast scrap is still said to be very scarce. Dealer's selling prices are as follows:

Old iron rails, gross,	$12 00@$12 25	Axles, net	$14 25@$14 75
Old steel rails long, gr.	10 50@ 11 00	Cast borings, net	4 00@ 4 25
Old steel rails, short	9 00@ 9 25	Wrought turnings, net	5 50@ 6 00
Old wheels, gross	11 00@ 11 50	Axle turnings, net	7 25@ 7 50
Railroad forge, net	12 00@ 12 50	Mixed steel, gross,	7 25@ 7 50
Dealer's forge, net	10 50@ 11 00	Stove plates, net	6 00@ 6 25
No. 1 mill, net	7 50@ 8 00	Heavy melting steel, gr.	8 25@ 8 50
Heavy cast, net	8 50@ 9 00	Old iron splice b., net.	13 25@ 13 50
Malleable cast, net	8 00@ 8 50		

CLEVELAND.

OFFICE OF *The Iron Trade Review and Industrial World.* 27 VINCENT ST., March 30.

The amount of Lake Superior iron ores already sold for 1898 is far beyond any total of engaged product that could be figured up at the close of any previous March. Figures made by the best authorities in the trade account for nearly 8,500,000 tons of ore that has been bought by furnaces without mining connections, or that will be taken according to schedules already arranged by producing-consuming interests. This is equal to a year's consumption of Lake Superior ores, only a few years back; and the fact that its disposal has been practically without any of the commotion that used to attend the opening of the active selling season, illustrates the change that has come over the business since furnacemen have turned miners. Roughly, the amount named includes over 4,000,000 tons of old-range Bessemers, 3,000,000 to 3,500,000 tons of Mesabi ore, and 800,000 to 900,000 tons of old-range non-Bessemer. The leading Pittsburg interest has not been directly in the market for outside ores, barring 200,000 tons or so for basic mixture; but the deal by which it exchanges a round lot of Norrie for Chandler gives it an ore it has always bought. A Mesabi deal is also reported, by which a certain amount of Adams and one or two other Consolidated Co. ores is taken, instead of mining the Mountain Iron and Oliver as extensively as some reports have indicated. The low-phosphorus old-range ores are well sold, Minnesota No. 1, for example, being practically out of the market. Non-Bessemer ores are selling better than has been known so early in the season, Vermilion, Marquette and Menominee mines all sharing in the business. Non-Bessemer from the first-named has sold at $2.50, practically the basis of 1897. Valley furnacemen as a rule have done little with Mesabi ores, and the general market on these ores is still a waiting one. There is no chance of any agreement on price, but thus far the basis is not established by open transactions. The freight market is not active, with all the ore sold. Escanaba shippers offer 45 cents, but little has been done. From Ashland 60 cents and from Marquette 55 cents are present offers on season business.

PIG IRON.—Thus far the outcome of conferences by valley producers of Bessemer iron is an understanding that for the next month Bessemer will be sold at not less than $9.75 at furnace for prompt shipment and $10 for second quarter. The situation may develop by the latter part of April, so that a future plan of action on lines of closer organization may appear feasible, but for the present the more or less elastic bond of a gentlemen's agreement is the extent of the much-heralded "pig iron trust." One decisive test is suggested, of the desire which is said to be general among the furnacemen for improved conditions — the banking of furnaces for 30 days. Whether this or the more circuitous route of a pool will be chosen will be developed. The market for Bessemer iron is exceedingly quiet, but the few March sales reported are at $9.75, and a little business has been done at $10, furnace, for April, May and June. Foundry iron is a trifle firmer and the improved demand for foundry products is felt in turn by the furnaces. Local gray forge has sold at $8.75 to $8.85 valley furnace, or $9 to $9.10 delivered at valley mill. Southern is sold for valley delivery at $9.25. Lake Superior charcoal is still fairly active at the improved prices. We quote f. o. b. Cleveland:

Bessemer, second quarter	$10 65	Valley Scotch No. 1	$10 40@10 65
No. 1 Strong Foundry	10 40@10 65	Valley Scotch No. 2	10 15@10 25
No. 2 Strong Foundry	9 90@10 15	Gray Forge	9 15
No. 3 Foundry	9 40@ 9 65	Lake Superior Charcoal	11 50

FINISHED MATERIAL.—Some shipyard work has been figured upon recently, both for Cleveland and Chicago. The Cleveland Shipbuilding Co. has the contract to build a barge for Rhodes and others, of Buffalo, and 1,000 tons of steel has been taken by Pittsburg. The material for the big Rose building has been under negotiation the past week and work has begun. In bars and sheets the market is without incident, except that a trifle better feeling is noted in the former. Pittsburg mills are not quoting the extremely low prices recently prevailing on steel bars, .95c, Pittsburg, being generally named, and one mill is quoting 1c. We quote beams and channels, 1.15c; angles, 1c; tees, 1.20c, and zees, 1.15c; tank plates, 1c to 1.05c, Pittsburg. Bar iron is 1c Cleveland in small lots; sheets, No. 27, 2c to 2.05c, Cleveland. Three local wire mills are closed in part, pending transfer to the new American Steel & Wire Co. Quotations are unchanged at $1.15 for smooth wire and $1.40 for wire nails. Tin plate mills are busy, but going prices are very low. A valley mill is contracting for 10,000 tons of tin plate bars.

CINCINNATI.

March 29.

Consumption of all grades of iron keeps up at an unparalleled pace, and there is a good small-lot demand for iron for malleable and general foundry purposes, but current business is featureless. There is still some irregularity in prices on Southern irons outside the agreement, but leading furnaces are adhering to their prices. While money for new undertakings is not available under the uncertainties of the Cuban situation, manufaoturers readily obtain all that is needed for ordinary business operations, and the feeling is general that the resources of the country are ample for any emergency and that business will not be seriously shaken. We quote for cash, f. o. b. Cincinnati: Southern coke, No. 1 foundry, $9.75; No. 2, $9.50; No 3, $9.25; gray forge, $8.75; mottled, $8.75; No. 1 soft, $9.75 to $10; No. 2, $9.50 to $9.75; Belfont coke, No. 1, Lake Superior, $11 to 11.50; Belfont coke, No. 2, Lake Superior, $10.50 to $10.75; Hanging Rock charcoal, No. 1, $14.50 to $15.50; Tennessee charcoal, No. 1, $12.50 to $13; Jackson Co. silvery, No. 1, $12.50 to $13; Standard Georgia car wheel, $14.25 to $15.

PHILADELPHIA.

March 29.

Buying and selling has gone on in spite of the warlike feeling at Washington, and business is at its maximum. Some large undertakings may be held back, but consumption is kept at the highest notch and does not shrink. There is no change to note in prices, which are held with remarkable steadiness. Foreign business is still being pushed and shipments of iron and steel and machinery are steady. This might be interfered with somewhat if war should come. Low prices in all lines are monotonous to sellers. In pig iron furnaces are not now expecting better prices, but are still hunting vigorously for economies. Some have quoted close to the lowest figures made in the depth of the depression. Others are as much as 50 cents above this level. We quote No. 1X foundry at $11.75, No. 2X at $10.75 to $11, No. 2 plain at $10.40 to $10.50, standard mill irons at $10.25, and ordinary at $9.75 to $10; basic at $10 to $10.25. The finished material market shows continued large comsumption, but though billets are firm, $17.50 being asked while $17.25 is offered, there is no change in rolled products. Considerable new business is in sight and plate and structural mills are running full. Bars and skelp are less active than other lines; but in general heavy consumption is still counted on. We quote refined bars at 1.12½c to 1.15c; common bars at 1.05c to 1.10c; steel bars at 1.15c; plates, 1.15c to 1.20c; angles, 1.20c; beams and channels, 1.30c to 1.40c.

THE annual convention of the American Foundrymen's Association will be held in Cincinnati, Wednesday, Thursday and Friday, June 8, 9, and 10.

THE IRON TRADE REVIEW

AND

INDUSTRIAL WORLD.

DEVOTED TO MACHINERY, METAL-WORKING AND FOUNDRY TRADES AND IRON AND STEEL MANUFACTURE.

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ENTERED AT THE POST OFFICE AT CLEVELAND, O., AS SECOND CLASS MATTER

MARCH 31, 1898.

In the current issue of the *Engineering Magazine* Mr. J. Stephen Jeans, of London, writes of "The Shifting Site of National Industrial Supremacy." The writer admits that the subject is a large one, that the data for a judgment are conflicting, that the considerations to be urged involve much of mere estimate, and that the elements of uncertainty are so many that no one should dogmatize. Much of the writer's leaning is to be gathered from his numerous questions. Regarding supremacy in the world's iron markets, he says that it will obviously lie with the country that can make the largest contribution to the increment of the world's iron consumption that will be witnessed in the next 20 years. The consumption of the world, now about 32,000,000 tons, was less than 5,000,000 tons in 1850; in 1870, only 12,000,000 tons. Keeping up the rate of increase that has been seen in this generation, the consumption in 1916 would be 46,000,000 tons. He asks whether the United States will make the largest contribution to this hypothetical quantity, and then follow these questions: "If so, to what extent can the United States furnish the difference? Are the supplies of the Lake Superior range practically inexhaustible? If not, how soon are they likely to be exhausted, if, as is probable, the drain upon them should be doubled during the next 20 years? And if the Lake Superior ranges are near depletion, what other sources of supply can the Republic muster?" All this is certainly borrowing tróuble, and from a considerable distance. The writer is too evidently disposed to jump across the period of large participation in the world's trade in iron and steel which all students of the situation believe to be just ahead of the United States, and to raise questions that are of much less immediate consequence, either to this country or its competitors. What country other than the United States will be in the best position to push for wider conquest at the end of the conceded period of its supremacy? is the form the question might properly take. There are several characteristically British touches in the article. The intimation that "Great Britain has everything excepting unlimited supplies of certain ores, within her own borders, and that she has the wide world over which to range in search of supplies," is scarcely meant to be taken, we presume, as a guaranty of her grip upon ultimate supremacy. Another illustration of the unconquerable optimism of the writer is the inference as to final victory for Great Britain, based on her present industrial inefficiency! We are seriously told that while there is in American shops to-day "little or no unexhausted reserve of force—in other words, that the man and his work are employed to their utmost tension . . . on the contrary, to bring up British works to the highest efficiency known in American practice, there is probably an unexhausted margin of 30 to 60 per cent to work upon." We must confess that an argument that begins with inefficiency and inferiority and that derives from it supremacy and world-mastery is altogether unique. Yet it prepares us, somehow, to accept without a murmur one of the concluding statements of the article, that "among the many surprises which the iron trade of the future has in store, it is perfectly conceivable that one may be a resurrection of British supremacy on a scale that no one hardly dares to dream of at the present time."

THE value of all iron and steel exports from this country in January was $5,511,639, as compared with $4,691,054 in January, 1897. The amount was less than in December, however, the total for the latter month being $5,879,384. The pig iron movement in January showed quite a falling off from December—12,640 tons, against 25,651. The lessening of cotton shipments from the South doubtless explains in part the decrease in pig iron. Rails fell off, also, from 14,118 tons in December to 8,533 tons in January. We give the detailed statement below, which indicates only a small increase in the total of the articles named, over the tonnage for January, 1897. Machinery exports in January amounted to $2,985,384, a slight falling off from the December total of $2,996,374, but an increase over January, 1897, when the valuation was $2,328,201:

EXPORTS OF IRON AND STEEL FROM THE UNITED STATES—GROSS TONS.

	January.		July—January.	
	1897.	1898.	1897.	1898.
Pig iron { ferro	10,191	750	57,172	5,985
Pig iron { all other		12,640		148,339
Scrap	97	1,394	1,072	28,172
Bar iron	203	370	1,410	2,581
Steel bars (not wire rods)	7,371	1,581	1,465	6,775
Iron rails	26	642	214	2,660
Steel rails	7,761	8,533	63,169	96,765
Billets, ingots and blooms	(a)	519	(a)	66,875
Hoop, band and scroll iron	44	33	167	1,198
Wire rods	(a)	587	(a)	11,071
Iron sheets and plates	132	163	588	2,752
Steel sheets and plates	213	790	1,700	4,853
Tin plates, terne plates, and tagger's tin	(b)	3	(b)	84
Structural material	(a)	1	(a)	8
Wire	3,786	4,684	25,881	31,751
Cut nails	910	1,000	6,098	9,445
Wire nails,	1,157	1,001	3,233	6,794
Other, including tacks		138		942
	31,891	34,729	162,169	368,154

(a) Not separately stated prior to July, 1897.
(b) Not separately stated prior to December, 1897.

IT is certainly straining at a gnat for Canada to attempt to exclude Southern pig iron on the ground that it is a product of convict labor. And it will take something more than the assertion to convince un-

prejudiced people that the agitation in England, just now, against Southern iron, ostensibly on this ground, is not prompted by other motives than a desire to free the country of the competition of products "tainted by convict labor." This question has been gone over heretofore, in connection with instructions given to collectors of customs at Canadian ports; but the injustice of the judgment then made up by the Canadian authorities is perpetuated. The special agent of the Canadian Government, who went to Alabama to investigate the matter, has reported that iron of the Tennessee Coal, Iron Railroad Co., the Sloss Iron & Steel Co., the Pioneer Mining & Mfg. Co., the Citico Furnace Co., and the Roane Iron Co., should be under the ban, because some of the coke used by these companies is either made by prison labor, or is from coal mined by prison labor. The facts of the matter, so far as relates to the first two companies mentioned, are that some convict labor is employed at some of the Pratt coal mines and at Coalburg, but only about one-fourth the coal mined at these two places is dug by convict labor. The coal from the two points, whether mined by free or convict labor, is sent to washers and there mixed together. The coke made from it is used exclusively at the Ensley and North Birmingham furnaces. There is no convict labor at the furnaces, and no convict labor is used in mining and coking operations except as stated; yet the Canadian government's agent has put the label of exclusion on all the pig iron manufactured by these two companies. The injustice of this discrimination is apparent, and for the time being it may have to be borne, as will some other inflictions upon products from the United States that are making uncomfortable competition for producers in outside territory. Yet it will not be possible to stop for long the outgoing tide of American trade by any such transparent temporizing.

Expansion of the Walker Co's Operations.

The Walker Co., of Cleveland, received word a few days ago that its proposal had been accepted for one-third of the lot of 60 gun carriages for 8-inch, 10-inch and 12-inch guns let last week by the Ordnance Bureau at Washington. The balance went to the Morgan Engineering Co., Alliance, O., and the Niles Tool Works, Hamilton, O. An extra force of men will be put on at the Walker works and the plant run day and night. The amount of work recently taken by this company, involving steel castings, has led to some preliminary figuring on steel casting equipment. At present other plants manufacture all the steel castings used by the Walker Co. If an open-hearth plant is built it will probably consist of a single 10-ton furnace of the Wellman rolling type. Plans are also under consideration for an extension to the machine shop.

The bulk of the work at the Walker plant recently has been electrical equipment—generators and motors for street railway operation. Some heavy cotton press work has also been under way.

Consolidation at New Castle.

Announcement was made last week of the purchase of the Norway Iron & Steel Co.'s (Raney & Berger) furnace at New Castle, Pa., by the Shenango Valley Steel Co., giving the latter interest two blast furnaces. A New Castle dispatch says that the steel company has also acquired the New Castle Wire Nail Works. The later has been a closely allied interest, but the ownership has not been identical.

THE converting department at the Edgar Thomson Steel Works broke the best previous record Sunday night, by blowing 101 heats.

PITTSBURG FOUNDRYMEN'S ASSOCIATION.

The monthly meeting of the Pittsburg Foundrymen's Association was held in the Builders' Exchange Monday evening, March 28, and was presided over by Mr. Jos. I. Seaman, of the Seaman-Sleeth Co. The following members were present: T. E. Malone, J. S. McCormick Co.; C. A. Stroh, Mackintosh, Hemphill & Co.; Isaac W. Frank, Frank-Kneeland Machine Co.; Wm. Altsman, James Collard; Jno. A. Meighan, Dawson Bros. & Meighan; W. T. Mobberley, Taylor, Wilson & Co.; Howard M. Hooker, Rogers, Brown & Warner; Jas. McDonald, Westinghouse Electric & Mfg. Co.; Dr. Richard Moldenke, McConway & Torley Co.; Saml. W. Hay, Whiting Foundry Equipment Co.; Charles Bailey, Reliance Steel Casting Co.; Jno. H. Early, William Early & Sons; G. W. Green, Jas. Rees & Sons Co.; P. Pflaum, Ft. Pitt Smelting & Mfg. Co.; J. H. Watt, Geo. R. Hamfeldt, James Boyle; Philip Mathes, Brittain & Mathes Co.; R. B. Lean, Crescent Fdy. & Construction Co.; Mr. McClaven, R. F. Barker, Pittsburg Mfg. Co.; Jas. R. Mills, Jr., *The Iron Trade Review;* and Secretary F. H. Zimmers, of the Union Fdy. & Machine Co. The secretary's report was the only feature of the business session, and the association listened to the paper by Chas. W. Friend, of the Clinton Iron & Steel Co., entitled "A Few Facts Noted in Manufacturing Foundry Iron." It appears on another page. On motion, the discussion of the paper was postponed until the April meeting.

A paper presented by Thos. D. West on "Standardizing Tests for Foundry Irons," was read by title, and copies of it will be in possession of members at the next meeting.

Lake Superior Iron Mines.

Announcement is made that the sales agency for the product of the Sparta mine on the Mesabi range is now in the hands of Pickands, Mather & Co. C. F. Stuart, who retains his interest in the Sparta mine, will sell the high-silica Mesabi Friend ore.

The Dober mine at Iron River is soon to be active. Machinery is being removed to it from the Mastodon mine.

The Minnesota Iron Co. did not intend to bring dividends until July, but 1897 proved fairly profitable. With the higher price of ore this year, it is expected that 6 per cent dividends will be maintained. With the expensive improvements and acquisitions of the past few years paid for out of earnings, the company is in excellent shape to make profits.

Duluth reports, which are not officially confirmed as yet, are that the Oliver Mining Co. has acquired the lease of the Zenith mine. Negotiations have been in progress, it is known, for some time, but recent indications were that the Oliver Mining Co. would not take the property. The royalty is 30 cents, and the lease runs for 10 years. The stockholders of the Zenith Mining Co. have voted to sell. If the Oliver Iron Mining Co. takes the property, development work will be undertaken on a considerably larger scale than has been the case heretofore.

It is reported that the Oliver Iron Mining Co. has an option on the South Aurora, a Gogebic property on which considerable money was spent in exploration a few years ago, though it has never been fully opened up.

The Bessemer shaft of the Franklin mine at Virginia, Minn., has started after a year's shut-down.

THE plant which the National Tube Works Co. recently completed at Christy Park, near McKeesport, Pa., and originally built for making seamless tubing, has been in operation for two weeks, making shells and projectiles for Government use. The order came from the Driggs-Seabury Co., of Connecticut, and is for 90,000 shells and projectiles ranging from a one-pound size to 4-inch calibre. The shells are of open-hearth steel and are drawn instead of being cast. A flat plate of the thickness required is placed on a cone, and by hydraulic pressure forced into a cone shape. The metal is passed from one cone to another, until it is finally pressed into the shape necessary, much like a blown window glass cylinder, but much smaller. If needed for drawn seamless tubing, the cap is cut off, but where it is used as a bullet, the top is pointed by pressure. The projectiles are loaded in Connecticut.

GOOD WORK IN STEEL CASTINGS.

We illustrate herewith some three-and four-throw crank-shafts made by the Sargent Co., of Chicago. The three-throw shafts are types of those which have been furnished in large quantities by the Sargent Co. for high speed engines. The company has furnished one concern, since the first of the year, with over 250 similar crank-shafts, varying in weight from 200 lbs. to 950 lbs., and has not had one returned for defects. The four-throw crank-shafts the company has not made in such large quantities. The two shown in the cut were for an air compressor. They are usually considered difficult castings.

President Garland Named for a Federal Office.

The nomination of M. M. Garland, president of the Amalgamated Association of Iron and Steel Workers, as surveyor of the port of Pittsburg, was sent to the Senate March 24. The term of the present incumbent expires on May 1, and at that time if not sooner, Mr. Garland will resign from the presidency of the Amalgamated Association in order to assume his new duties. Mr. Garland first came into prominence as a leader among iron workers in 1890, when he was made assistant president of the Amalgamated Association. Two years later and while the Homestead strike was at its height he succeeded William Weihe as president, and has been re-elected each succeeding year. In this time he has been a conservative yet fearless leader and has raised the standard of organized labor by appealing to reason rather than force in settling labor disputes. Attached to the position of Surveyor of the Port of Pittsburg is a salary of $5,000 per year and the duties of the place will demand the entire time of the incumbent. As successor to Mr. Garland in the presidency of the Amalgamated Association several names are suggested, among them J. D. Hickey, of Milwaukee; W. A. Carney, W. S. Collier, John Pierce, Theodore Shaffer, Stephen Madden, Pittsburg; Daniel Malone, Youngstown, O.; David Llewellyn, Wheeling, W. Va.; John Morgan, Mingo Junction, O., and Milton Reese, Niles, O.

Chicago and Central American Trade.

The Chicago branch of the National Association of Manufacturers, at a luncheon at the Technical Club, March 25, discussed trade opportunities in Central America. The luncheon was given by C. F. Quincy, vice-president for Illinois, and representatives of leading Chicago manufacturing concerns were present. Geo. M. Barbour, of Detroit, the Michigan vice-president of the National association, was the first speaker and was followed by Dr. H. P. Boyce, U. S. Consul at Truxillo, Honduras. He said that Central America, being without manufacturing, its mining and agricultural interests made a good market for many of the products of the States. He said Chicago could find a market for hardware of every kind, including machinery, wagons, bicycles, and clothing. He thought Chicago was behind other sections of the country in the aggressive efforts to trade with Central America. He predicted that when the railroad from Puerto Cortez to Amapalo, on the west coast of Honduras, was completed, the field of trading would be widened.

George C. Power spoke of New Orleans as the natural port for Central American trade for Chicago manufacturers and merchants. He said New Orleans was admirably adapted for shipping trade, and the present advantages could be and would be greatly increased. President Elliott Durand, of the Chicago Freight Bureau, spoke of the discrimination against Chicago in the way of rates to southern seacoast ports, thus giving the advantages to the eastern cities in the development of foreign trade. He thought with fair rates to gulf points Chicago could compete with the Atlantic Coast and in point of time deliver goods in Central and South America ahead of the other sections.

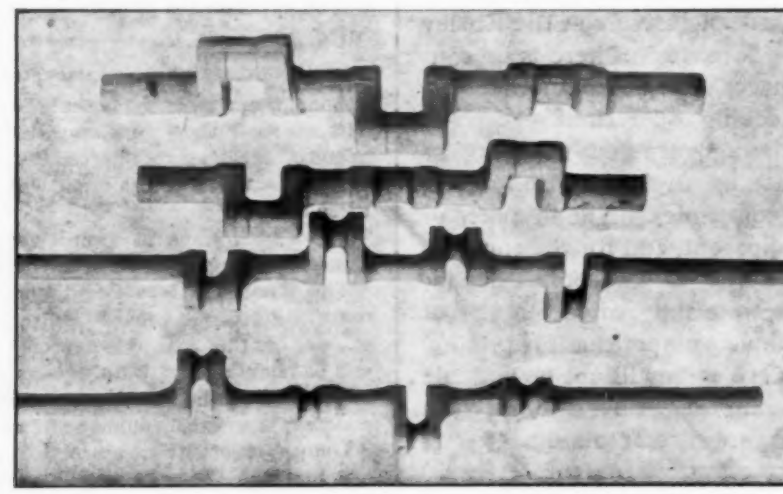
P. W. Gates, chairman of the committee on patent laws of the national association, spoke on the patent laws of the country. George R. Allen closed the speaking by relating the efforts being made by the association in collecting information relative to Central and South American needs, and providing for warehouses at principal points for the permanent display of goods.

Foundry Supply Headquarters.

Announcement is made in a late publication of the Osborn Mfg. Co., 50 High st., Cleveland, concerning the extensive lines of foundry supplies which the company manufactures. Brushes have a prominent place in the pamphlet, these being the company's principal specialty. The requirements of platers and metal finishers, as well as founders, are fully met in the brushes illustrated, which range from pure Russia bristle through the various forms of wire goods for cleaning, polishing, etc. The circular brushes made for platers and metal finishers include all regular sizes, and in addition a 15-inch diameter brush, ranging from 2-inch to 12-inch face. This company makes a specialty of wheel brushes of all kinds. In addition to the regular lines of wheels made from tampico and bristle for platers' use, they have recently invented a new steel wire wheel brush for cleaning casting patterns, etc. This brush as originally made for foundry work is 15 inches diameter, with about 2-inch face, but can be furnished of any size desired.

The Osborn company has recently made some special wire wheels of 6-inch and 12-inch face. It has a well equipped plant for both metal and woodwork, with unusual facilities for getting out special goods in its line. Flue brushes, bench brushes, and steel bloom brooms for removing scale from hot iron plates, are also manufactured. Special goods include furnace and heater, radiator and cool screen brushes.

The general foundry supply stocks of the Osborn Mfg. Co. include B and S foundry pails, coke forks, riddles, shovels, molders' bellows—in short all minor requisites of the foundry. The goods illustrated in the catalogue before us are carried in stock, and Central Western foundrymen can supply their wants fully and promptly.



GOOD WORK IN STEEL CASTINGS.

THE Sharon Boiler Works, Ltd., Sharon, Pa., are running full on an order for a furnace at Knoxville, Tenn.

THE SENNETT COMPRESSION COUPLING.

The illustration gives a view of the working parts of the Sennett compression coupling, for which the following claims are made: Firm grip, great strength, simplicity, and the ease with which it can be adjusted or taken apart. This coupling has been tried for some time, and, it is claimed, has proved reliable in all lines of service. It is made of the strongest cast iron, with bands of wrought iron. The slightly tapering sleeve, which is in halves, is bored smaller than the shaft. When the bands are driven home by the aid of a hammer and a block of wood or piece of lead or babbitt, the sleeve is compressed tightly upon the shaft.

If extra service is needed upon the shaft, the rings can be heated slightly over a flame before driving on the sleeve, giving them a shrink fit and still make them easy of adjustment. The strength of each size of coupling is designed to equal the strength of each size of shaft. No bolts, no screws, and no wrenches are required, so that there is nothing to catch on the clothing or the person.

The manufacturer is the Geo. B. Sennett Co., of Youngstown, O. The coupling is made in all sizes. It is preferable to flange couplings and doubtless will succeed them for large sized shafts in any position. Flange, clutch, and universal couplings are also made to order.

Contract Let for the First Steel Plant in Mexico.

The Wellman-Seaver Engineering Co has just taken a contract to build a new basic open-hearth steel works at Chihuahua, Mex. The enterprise is undertaken by a new Company, and capital from the United States will be largely interested. This will be the first plant to make steel in the Republic of Mexico. It is to be in every way an up-to-date plant, and will be equipped with the most modern labor-saving devices.

There is already a rolling mill at Chihuahua, operated by the Compania Industrial Mexicana. It was started up in 1892, and the equipment consists of two Siemens gas heating furnaces, three trains of rolls (8, 12, and 20-inch), one 1,500-lb. hammer, and seven cut nail machines. The annual capacity is 10,000 tons of merchant bar iron, bolts, nuts, washers and horseshoes, and 12,000 kegs of nails. The raw material is scrap, of which there is an abundance in Mexico. The projected open-hearth plant will be located close to the rolling mill. Scrap will be used for the most part in making steel. There are local deposits of hard ore, but they have not been developed.

A PHILADELPHIA stock market report has the following concerning the Pennsylvania Steel Co.: "It is understood that the interest on the Pennsylvania Steel Co. 5s, amounting to $25,000, which falls due in May, will be paid in cash. The company earned considerably more than its interest charges in the last six months of 1897 and earnings since then have been keeping up well, so that it may be said that the company is now earning more than interest charges month by month. Orders in February aggregated about $900,000, and it is believed that March will round up a full $1,000,000. Orders beginning with the late fall months have averaged from $1,000,000 to $1,250,000 per month, and present business is about $250,000 to $300,000 per month greater than at this time a year ago. Following the May interest, no heavy interest falls due until next August, and the opinion is expressed that no call is to be made in the immediate future on security holders for fresh working capital. The suggestion was made by the president in his annual report that the bonds of the company in its treasury be taken by stockholders. This, however, was regarded as but a suggestion, and nothing has been done toward carrying it out. Whether the August interest will be paid in cash or scrip is not now to be determined. It will depend on how business is up to that date. Under the mortgage the company's bonds could be paid in scrip in the three years following the reorganizaiton in 1895. This scrip is now quoted at 60, whereas it was quoted at 50 a short while ago. We understand that the immediate business outlook based on orders in hand is favorable to a broadening of its present volume."

A Point in the Last W. F. A. Discussion.

TO THE EDITOR:

Will you please give space for correcting the inference drawn by some from my communication to the last meeting of the Western Foundrymen's Association. In the copy I sent the references to carbon all had that term in the plural number. The point I intended to make was that it is not essential to determine how much of the carbon is held in the graphitic and how much in the combined form in the pig metal, as some had claimed it was. The effect of the total carbon in pig iron I did not touch. If I had wished to treat this point, I would not have taken up the subject of chill and sand casting of pig metal, as I did. It is to be regretted that the question I raised was misunderstood, as many require to be righted in their views on this point. I do not deny the necessity of often knowing the amount of total carbon which exists in pig iron, but this is a question wholly foreign to what I presented.

THOS. D. WEST.

Low Alumina Blast Furnace Slags.

Chas. F. Stuart, of the iron ore firm of Stuart & Co., Western Reserve Bldg., Cleveland, has published an interesting booklet for furnacemen's use. Some 90 pages of calculations are given, showing the ratios which should exist between silica and alumina in ores, to produce a slag containing 12 per cent alumina, under varying conditions of burden and varying silicon in pig iron. The tables are based on Connellsville coke analyzing 6 per cent silica and 3.5 per cent alumina; on Valley limestone containing 90 per cent carbonate of lime, 4 per cent silica, 2.5 per cent alumina, 1.5 per cent magnesia; on an ore mixture containing an average of .50 per cent lime and 1 per cent magnesia, on 57 per cent furnace yield. The tables cover variations of 0.25 per cent in the silicon of the metal—from 0.50 to 3.75 per cent—and a range of fuel ratios beginning at one pound of ore to one pound of coke and running to 2.6 pounds of ore to one pound of coke.

The author says that he selects 12 per cent alumina in the slag as a basis of calculation only because this is close to the average furnace practice in the Central West. His own theory, confirmed by years of furnace practice, is that mixtures resulting in a slag containing 10 per cent in alumina and as much less as possible, give low fuel consumption, uniform operation of the furnace, and cleanest working. While other furnacemen have recognized the low-alumina-slag principle, Mr. Stuart has made it especially prominent, and the results attained in his practice and the endorsement given his book by Central Western furnacemen promise an increasing amount of attention to this factor in blast furnace equations.

In the latter portion of the book are worked out two slag calculations—the first from a mixture containing 60 per cent of Chapin, 29 per cent of Sparta and 11 per cent of Clifford ore, and the second from one containing 55 per cent Chapin, 35 per cent Fayal and 10 per cent Pewabic Genoa.

IN connection with the public movement to build a new observatory either in Allegheny or Pittsburg, George Westinghouse, Jr., president of the Westinghouse Electric & Mfg. Co., has offered to furnish the entire electrical equipment of the new observatory, without limit as to cost or amount. It will consist of motors for raising and lowering the floor of the observing room, dynamos for lighting the buildings and gas engines for running the dynamos. It is thought other prominent manufacturers will also offer different portions of the proposed new building.

THE American Pig Iron Storage Warrant Co. had in yard 282,400 tons of pig iron on March 20, 3,800 tons having been withdrawn and 3,100 tons put in yard in the preceding 10 days.

PERSONAL.

Edwin Fairfield Hurlbut, an old resident of Chicago, and a stockholder of the Dearborn Foundry Co., died Thursday, March 24, at his home at Pasadena, Cal. Mr. Hurlbut had lived the greater part of the time for fifteen years in Pasadena, where he had built one of the finest residences in the place, but he always retained his legal residence in Chicago and kept his business interests and investments here. It was his custom to visit that city yearly, his last stay there having been in December, at which time he was in perfect health. His death was due to pneumonia. Mr. Hurlbut was 70 years old. He went to Chicago from Cleveland 40 years ago and became a member of the firm of N. S. Bouton & Co., which was in its day the most prominent firm in the West engaged in the general foundry business. He was afterward connected with the Union Foundry Works, but retired from active business in 1883, at about which time he bought an interest in the Dearborn Foundry Co. In addition to this he had many other investments in Chicago. Mr. Hurlbut had a wide circle of acquaintances, and was held in high esteem by all who knew him. He leaves a widow and one daughter.

S. T. Johnston, who has been connected with the sales department of the Whiting Foundry Equipment Co., of Harvey, Ill., for a number of years, has resigned that position, to be manager of the Chicago branch of S. Obermayer & Co., dealers in foundry equipment and supplies. Mr. Johnston brings to his new position a wide acquaintance among foundrymen and a large experience which will make him a valuable acquisition to the Obermayer company.

An example of rapid advance to responsibility in directing mechanical operations is found in the career of Chas. A. Boyd, manager of the manufacturing departments of the Walker Co., of Cleveland. His mechanical bent was shown in boyhood. At 12 he built an engine and a few years later served an apprenticeship in railroad shops at Terre Haute, Ind. After serving as apprentice draughtsman with the "Bee Line," he was appointed chief draughtsman May 1, 1888, being then but 19 years old. He resigned in 1891 to accept a position with the Cleveland City Forge & Iron Co., Cleveland. He remained a year, occupied with special work, and in 1892 went to the Short Electric Railway Co. In April, 1894, Mr. Boyd entered the service of the Walker Co., being put in charge of motor design and construction. Later controllers also were put under his supervision, and in a short time electric cranes. In the fall of 1895, Mr. Boyd was made chief engineer, and in January, 1897, being then 28 years old, was appointed assistant superintendent, and three months later superintendent, with the entire active management of the engineering department and manufacturing.

Chas. Kennedy, formerly general sales agent at Chicago for the Ewald Iron Co., of St. Louis, has recently accepted a similar position with Brown & Co., of Pittsburg, the proprietors of the Wayne Iron & Steel Works.

C. B. Brown, for 20 years manager of the Ontario Rolling Mills, at Hamilton, Ont., has assumed the management of the Western Iron & Seel Co's rolling mill, at Lakeview, near Tacoma, Wash. The Hamilton plant, which was burned, was owned in part by Youngstown, O., men, who built the Lakeview plant in 1894.

Bernard H. Rubie, of Pittsburg, a member of the McClure Coke Co., until its purchase by the H. C. Frick Coke Co., died last week at the age of 59.

Edward Allen Low, who died at Brooklyn, N. Y., March 20, aged 81, had been for the past 18 years secretary and treasurer of the Lowmoor Iron Co., of Virginia.

Frank D. Carney, who has been engineer of tests for the Pennsylvania Steel Co.'s works at Steelton, has resigned and will go to Berlin to accept a position in a German iron works.

M. M. Garland, president of the Amalgamated Association of Iron and Steel Workers, is to speak on "Sunday Work in Mills," at the Fourth Avenue Baptist Church, Pittsburg, on April 4.

General Miles, commanding the army; Captain Maus, his aide; Major Phipps, of the Board of Ordnance, and ex-Congressman Outhwaite, of Columbus, O., the civilian member of the board, went to Cleveland March 29, to see the work of internal forging performed on the one-piece steel gun which is being finished at the Otis Steel Co's works under direction of Dr. R. J. Gatling. The work is to be done by using a mandreling apparatus devised by Dr. Gatling.

According to later announcement, Frank Baackes, of the Salem Wire Nail Co., will be general manager of the American Steel & Wire Co., instead of C. E. Robinson, whose name was given in the original list of officers of the combine. Mr. Baackes will be both general manager and general superintendent, and will occupy the offices of the old American Wire Co., Cleveland.

Neel Weissenberg, of Finland, who is interested in iron and steel manufacture, is making a study of the business as carried on in this country. He has examined the large plants near Pittsburg.

Henri Al. Cardozo, representing the French Government board of inquiry, department of arts and manufactures, is in the United States, visiting prominent manufacturing establishments in various lines. He has been in Cleveland and Pittsburg the past week, investigating iron and steel manufacture.

Messrs. Lambert and Levis, the former general manager, and the latter confidential agent of the well-known steel manufacturing company of Lazare, Weiller & Co., Havre, France, have been in Pittsburg and Cleveland the past week visiting iron and steel plants, under escort of J. S. Markham, secretary of the Garrett-Cromwell Engineering Co., Cleveland. Wm. Garrett, of the latter company, has been in Havre for some time superintending the building of a rod mill for the French company.

THE NEW GENERAL ELECTRIC FOUNDRY.

The General Electric Co., in view of the constantly growing demand for its apparatus, has decided to make a large increase in its manufacturing facilities. On March 25 the company placed contracts for the construction at its Schenectady works of a new foundry, which will be one of the largest in the country. The present foundry has been for some time entirely inadequate and considerable work has been passed on to the well equipped foundry which the company has at Lynn. The work to be done has grown, however, even beyond the capacity of both the Lynn and Schenectady foundries, working overtime, and all is now to be concentrated in the new foundry, construction of which will begin immediately. The building will be of brick, 500 feet long and 140 feet wide, with an L 100 x 120 feet. The latter will be used as a cleaning shop. A number of sand sheds, several smaller buildings for the storage of foundry material, and a new pattern storehouse 200 feet long, 60 feet wide and two stories high, will also be erected. All combined, the floor space occupied will be about 12,000 square feet. Plans are also under consideration for a new machine shop, 650 feet long by 165 feet wide, but the appropriation for this has not yet been authorized.

The buildings will be erected on the property which the General Electric Co. recently purchased. It lies to the west of the present works and parallel with the Erie canal. The foundry will be built several hundred feet from the canal and will have in close proximity the sand sheds and pattern storehouse. Every precaution will be taken to eliminate risk from fire; the pattern storehouse will be made as absolutely fireproof as possible. The foundry will be a model of the most approved practice. The engineers of the company have drawn on the experience of other companies which have recently constructed foundries. The building will be of imposing proportions, and will be in plain view from the New York Central tracks.

The contemplated machine shop will be devoted almost entirely to very large machine work. The size of the great generators which the General Electric Co. has been manufacturing has been increasing of late, until to-day a generator of 4,000 h. p. is not regarded as of unusual size. Generators of 5,000 h. p. are now in course of design, and the demand upon the shop in which the large machinery has been built heretofore, has far outgrown its present proportions. The middle aisle of the new machine shop will be 65 feet wide, with narrower aisles down each side. Electric traveling cranes will be installed to operate along each aisle, and a gallery will be built along one side only. All the large machine tools will be removed to the new shop, their places being taken by smaller apparatus. The total floor space of this building will amount to not less than 144,250 square feet.

Review of the Technical Press.

[Translations, Condensation and Comment expressly for The Iron Trade Review by Dr. Richard Moldenke.]

Iron and Steel for Milltary Purposes [*Deutsche Heeres Zeitung*, Feb. 23, 26.]—Capt. Henning gives a very interesting review of the progress of the iron industry as affecting military requirements. The article is of an historical nature, and is intended to record some of the older experiences when nickel steel for armor plate was as yet unknown. After tracing the production of wrought iron from the earliest traditions to the introduction of the Siemens-Martin and the Bessemer processes, Capt. Henning brings out the reasons why wrought iron naturally became the material used for armor plate and projectiles, in the early evolution of methods of offense and defense. The knowledge of the behavior of wrought iron was such that for given thicknesses of armor plate the necessary muzzle velocity of suitably constructed guns could be calculated beforehand, and vice versa. The use of wrought iron for armor plate was considered essential everywhere, and in England, in addition, for heavy ordnance. Germany never used wrought iron for cannon. Unfortunately the neglect to exercise a careful supervision over the manufacture of wrought iron armor plate soon brought about failures of a serious kind. Lack of homogeneity was the chief difficulty, this eventually leading to the abandonment of wrought iron in favor of steel. Once the highest grade of wrought iron was produced, the increasing effect of penetration of high class projectiles could only be met with an increase in the thickness of the plate. This led to inferiority of plates and excessive weights. Hard steel plates were then tried with the idea that the living force of the projectile should expend itself in producing deformation before it could effect penetration. Hence the laminated or compound armor plate made by welding a hard steel plate of ⅓ the final thickness upon a soft wrought iron backing. This raised the resisting power of the plate to three times that of a soft plate of equal thickness, and the saving thus made in weight counterbalanced the extra cost. It was now only a matter of time for this newly created branch of the steel industry to develop to a point where wrought iron was discarded entirely. As to projectiles, we have an intermediate step, the chilled cast iron product. Captain Henning goes into the requirements of this branch of foundry work, which is familiar to all those interested, in this country. The first trial showed the value of this material, the point of the projectile being deeply imbedded in the armor plate, and the rear end completely shattered. Further trials developed the fact that while wrought iron projectiles were flattened out and did no damage, the chilled cast iron ones would go clear through the plates. The conical shell of chilled cast iron, slightly contracted at the base, and capped with a thin layer of lead, proved to be the best of its kind until the steel projectile relegated it to the rear. It is interesting to note that the German projectile, made of the best charcoal iron, proved far superior to the English one made of poorer irons. Captain Henning now describes the series of experiments made demonstrating in their outcome the superiority of the breech over the muzzle loading systems, and points out that the chilled cast iron projectile had much to do in turning down the success of the Woolwich system of artillery. While the breech loading cannon were still in embryo, the introduction of prismatic powder quickly showed their superiority over the muzzle loaders. These could not develop any more, and from then on gradually dropped behind under the pressure of constantly rising requirements exacted from modern ordnance. It was really a struggle of steel with wrought iron, and when that point was once settled, England began to use steel for her artillery. One of the chief reasons why steel replaced chilled cast iron for projectiles was the difficulty of inserting copper guides into the chilled metal, the leaden ones used formerly proving too soft with the increasing muzzle velocities obtained. Steel could be grooved for this purpose without suffering any deformation. This of course brought about a considerable increase in price, but it had to be done. In the meantime chilled cast iron was tried for turrets, Germany not being in position to forge her own bomb proof, gun shield, etc., at the time. The conditions presented by fortifications as against the defense of war vessels are such that what would be excessive weight in the latter case answers perfectly in the former. Cost alone influences weight in systems of land defense, and moreover a proper utilization of natural obstacles will keep the enemy's guns at a good distance, which in turn means a decrease in the chances of damage to the works, although the accuracy of the shots may be very great. This is from attack by land where the calibre of the guns employed cannot be very great from the nature of the case. Coast defenses, however, have to withstand attack from guns of the heaviest calibre, although the chances of hitting are reduced through the greater uncertainty of aim. Trials of the endurance of armor protection for the 8.5-inch guns were made. The material was cast on the spot, no bolts or anchoring being used. The only other material which could be treated this way would be cast steel, but at a much higher cost. Turrets were now cast of chilled iron and subjected to tests. These proved unsatisfactory, however, the embrasures being splintered and finally wrecked. The dome was shattered by the bomb of the regulation 8.5-inch rifled mortar. A number of interesting points were noted in this connection, the very thick plates of the casemates being too soft, and the thinner bomb-proof domes too hard, a thing easily accounted for in chilled cast iron practice. While the commission appointed could not recommend chilled cast iron plates as better adapted for defensive armor, nevertheless the results of further tests of heavily arming a coast battery and then attacking it with heavy siege guns, led to the general adoption of this method of protecting fortifications in various parts of the world. After a careful study of the question for 10 years, Germany was able to produce its own material, and this of so high a grade that the reflex action of the information thus obtained upon commercial enterprises proved to be of a marked character. Thus the manufacture of chilled cast iron armor plate proved to be the type upon which compound and finally homogeneous steel plates were modeled. Captain Henning now describes the difficulties which had to be overcome in this work, mentions the various branches of service which were drawn upon for light on the intricacies encountered, and finally shows how the production of steel kept on increasing in quantity and quality, while chilled cast iron remained stationary. The roofs or domes of bomb-proofs and turrets were made of nearly flat rolled plates. From the nature of the case a conical projectile can never strike it point on, but always in a glancing direction, hence only deep scratches are produced, the bursting of the bomb doing no damage to the wrought iron or steel, while chilled cast iron would be wrecked at once. Again when chilled cast iron is used for the direct interposition of mass to the striking projectile, the enormous thickness required makes the first cost too high when compared with steel as made at present. Captain Henning concludes with an excellent résumé of the improvements made in chilled cast iron work, tracing it from the ores to the finished product, and showing that the present remarkable degree of perfection is due in the greatest measure to the proper application of scientific methods.

Nickel Steel for Staybolts.—*Railroad Gazette*, March 18, has an editorial in which attention is called to the growing favor which nickel steel is finding at the hands of railroad engineers. The ability of nickel steel to withstand alternating stresses makes it appear desirable to try it in places where much damage results through defects from service strains not visible on the surface. Thus the stay-bolt for locomotive boilers is something which cannot be too good, and it is stated that a Western road is now experimenting with nickel steel for this purpose. Experiments made by this road on the material before service trials showed that the carbon was low, manganese high, being nearly 1 per cent, and nickel 3.7 per cent. It broke at 86,930 pounds per square inch, the elastic limit being 61,900 pounds; the elongation was low, however, being only 19.2 per cent. Vibrating tests were made with this material, a load of 1,000 pounds being kept on the bar, while its free end was made to vibrate at the rate of 500 strokes per minute of ⅛-inch amplitude. The average vibration of two specimens was 255,828, which is claimed to be three times as much as the best material heretofore available would stand. There are many points yet to be settled before nickel steel can be recommended for this purpose, but there seems to be every reason why trials should develop its utility for making the stay-bolt for locomotive boilers.

The Bessemer Road and Its Conneaut Terminals.

With the opening of the lake season of 1898 the Pittsburg, Bessemer & Lake Erie route from Conneaut to Pittsburg will be for the first time a factor in the handling and transportation of ore. So far as formal proclamation goes, the road was opened on October 4 of last year, and ore trains have been running to Pittsburg since that time. The winter, however, has seen a rebuilding of the portions of the road north of Butler, Pa., and the completion of the Conneaut terminals on a scale fully as modern and liberal as that which marked the construction from Butler to Duquesne.

In the year and a half since the extended line was first projected as a Carnegie Steel Co. auxiliary it has lost much of its terror to other north and south lines from Lake Erie, as well as to competing steel concerns, the early predictions of grave consequences from the revolution in practice and cost having given way to a study of the engineering features and economical appliances of the new line and its terminals. For it is recognized that in these particulars a pace has been set that others sooner or later will follow. Special attention has been directed to the new line since the intimation in Mr. Carnegie's recent letter that in connection with the deepened Erie Canal it may become a factor for nearly two-thirds of the year, in the question of freights to the East and for export.

The road, as is generally known, was formed by the old Pittsburg, Shenango & Lake Erie Railroad from Butler to Conneaut Harbor, and a new line 42 miles long from Butler to Pittsburg. Much was said in the press last year, and justly, of the engineering features and the rapid construction of the new branch. The problem of securing a maximum grade of but 31 feet per mile southbound and 39 feet northbound for 42 miles, through the hills characteristic of Western Pennsylvania, was met by a policy of avoiding no cut, fill or trestle. A rough count makes 50 cuts, 17 bridges and two tunnels, 390

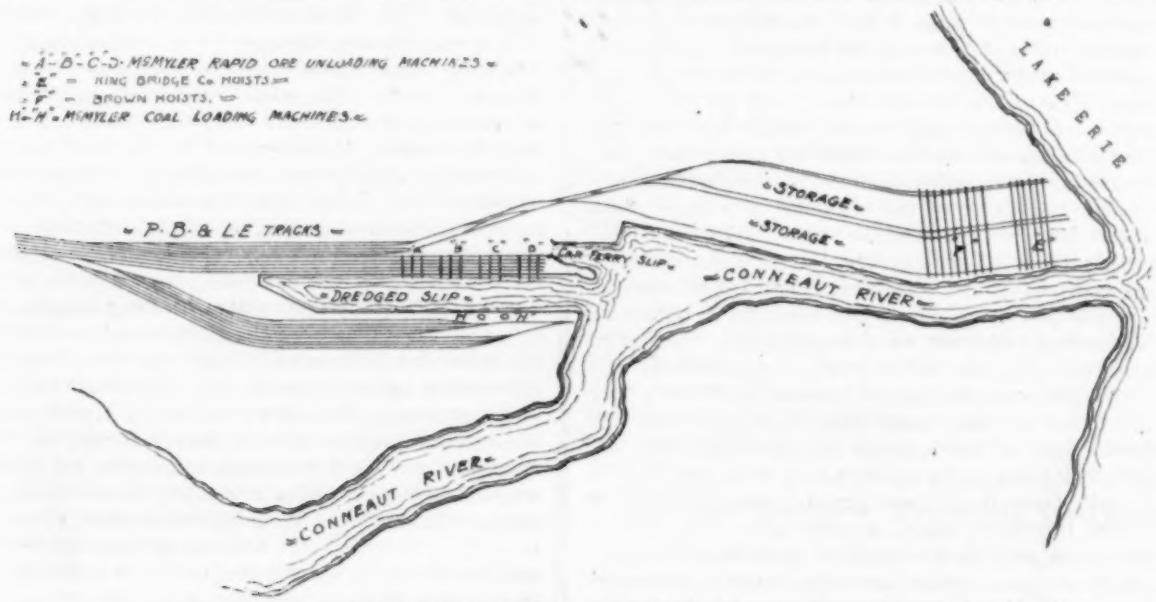


FIG. 1.—MAP OF THE PITTSBURG, BESSEMER & LAKE ERIE DOCKS AT CONNEAUT, O.

and 2,900 feet long respectively. This work was done between July 25, 1896, when the first contract was let, and Oct. 5, 1897.

From an engineering standpoint the most noteworthy work is the steel bridge that crosses the Allegheny River at a height of 125 feet, composed of 1,601 feet of viaduct 125 feet high and a number of riveted spans—one, 136 feet long, 15 feet deep; three, 344 feet 6 in. long and 57 feet 5 in. deep; one, 517 feet 6 in. long, 71 feet deep; one, 207 feet 2 in. long, 28 feet 3 in. deep. The total length, end to end, is 3,539 feet. The bridge, which is shown in an accompanying cut, is above low water. All trestle work is of steel, and 100-lb. rails were laid.

FIG. 2.—ORE STORAGE DOCKS AT CONNEAUT, O.

The work on the old branch has been on much the same scale as that on the new. The same easy grade has been secured, in many places, at the cost of a complete change of roaddbed. All altered or new bridges and trestles are of steel, and 100-lb. rails have been laid over the entire line. A 60-lb. rail was in use before. The only work yet remaining unfinished on the entire line is the bridge across the Monongahela River which will connect the road with Duquesne, and this now bids fair to be completed by June 1. Bessemer, the site of the Ed-

gar Thomson Steel Works, and furnaces, is reached over a high trestle spanning the Pennsylvania, B. & O., and Pittsburg & Lake Erie Ry. tracks. At Bessemer connection is made with the Union Railway, the belt line connecting the various plants of the Carnegie Steel Co., in the Monongahela Valley. Bessemer thus becomes in reality the southern terminus of the road.

An innovation in which the Bessemer road was the pioneer, and which is extending to other lake roads, is the steel car. By June 1, the Schoen Pressed Steel Co., of Pittsburg, will have built for the Bessemer road 1,000. Each car weighs 34,000 pounds and will carry 100,000 pounds. With the monster mogul engines included, the average train load will be 1

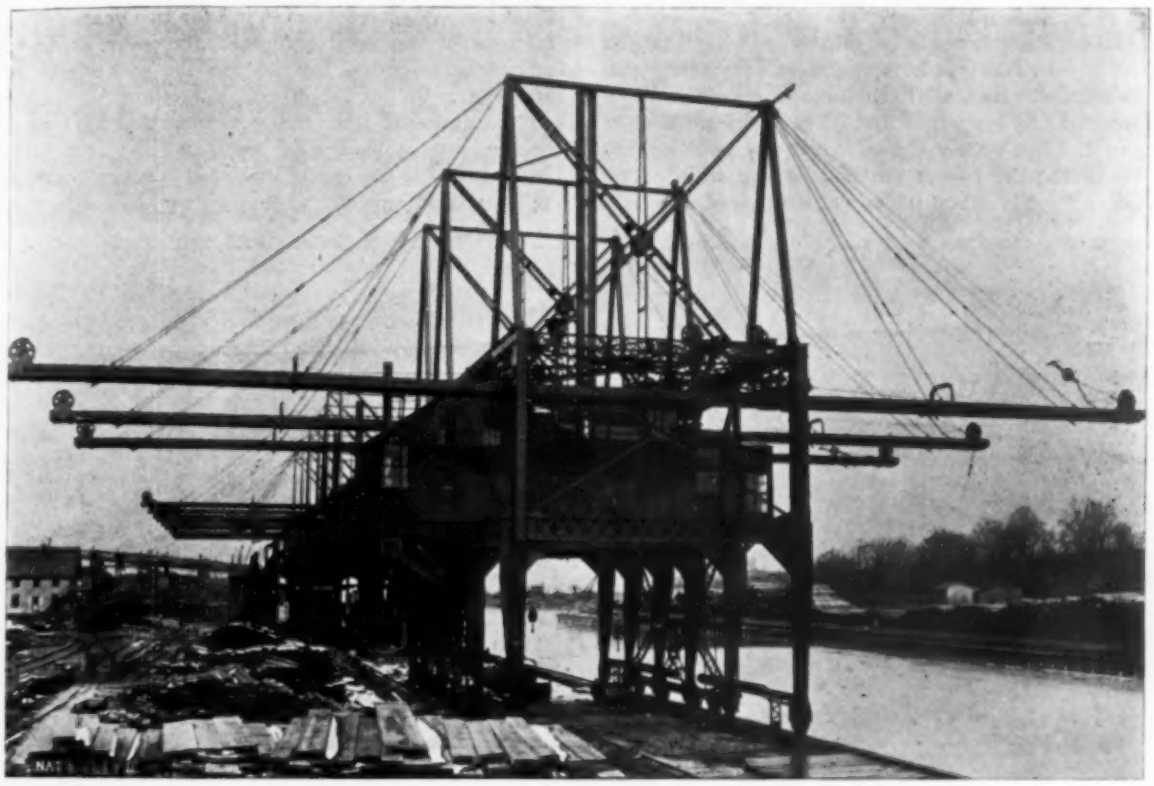


FIG. 3.—M'MYLER MACHINES FOR UNLOADING ORE INTO CARS, CONNEAUT, O.

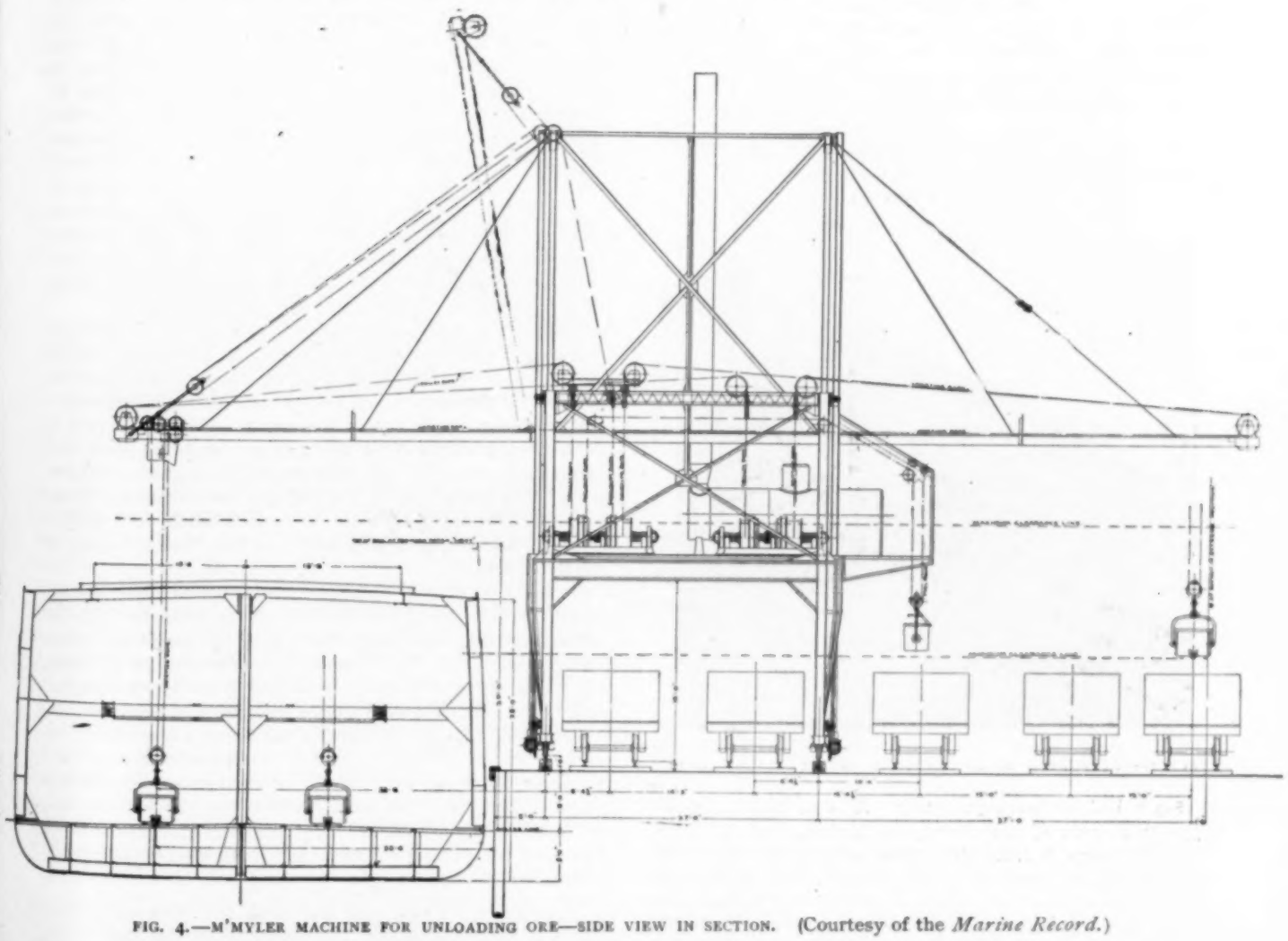


FIG. 4.—M'MYLER MACHINE FOR UNLOADING ORE—SIDE VIEW IN SECTION. (Courtesy of the *Marine Record.*)

tons. Quite recently a train of 35 steel cars pulled out of the northern terminals carrying 1,528 gross tons of ore. The total weight of the cars was 535 tons or only 26 per cent of the total load of 2,063 gross tons, making the 1,528 gross tons of ore carried 74 per cent of the total load.

Of the steel car itself it might be said in passing that its general adoption by lake roads is the most convincing evidence of its success. Its behavior in a recent wreck at Pittsburg has surprised its supporters and silenced one of the chief objections to it. The accident was a rear-end collision, the steel car being the third from the end of the train. Two wooden cars in front of it and the two at the rear of the train were demolished, as well as the striking locomotive, while the steel car remained uninjured on the track.

Beside the 1,000 steel cars referred to, the road has 2,400 wooden gondola cars and 150 flat cars. The motive power equipment is 20 heavy moguls, built last summer, three consolidation engines and 10 light locomotives which will be used as helpers.

The extent and convenience of the harbor arrangements at Conneaut will be readily seen from the accompanying map. It is one of the best natural harbors on the lakes, but prior to 1893 it had no commerce at all. At that time Congress began the work of improving the harbor, and the Pittsburg, Shenango & Lake Erie Railway built the ore docks, as shown, at the entrance to the harbor, these being now used for the receipt of storage ore. In 1895, 500,000 tons of ore were unloaded at Conneaut. Since the docks became the property of the Bessemer road a slip 160 feet wide and 1,000 feet long has been dredged, materially increasing the harbor facilities.

FIG. 6.—ALLEGHENY RIVER BRIDGE, P., B. & L. E. RAILROAD.

The dock improvements have been going on for two years. The old storage docks which extend back 325 feet from the water and are 2,000 feet long, are now spanned by 15 ore conveyors. Six of these were built by the King Bridge Co., of Cleveland, and nine by the Brown Hoisting & Conveying Machine Co. All have been in use for two years. The notable features of the dock equipment, however, are the rapid ore unloading machines, installed in the past winter by the McMyler Mfg. Co., of Cleveland. Something of their efficiency will be gathered from the statement that 800 tons of ore per hour can be unloaded by them, and that the largest steel freighters of to-day can be unloaded in seven hours, as against 14 hours and upward under ordinary methods, for boats of average capacity. The plant is for direct loading into cars and hence is located on the recently dredged slip. It consists of 12 legs, divided into four separate groups of three machines each, running on a 20-foot track. By means of a rack and pinion, the outer legs of each group of three may be moved from a 21-foot center to a 36-foot center, thus accommodating the legs to any difference between hatches. The four groups move on the track by means of a bevel gear working on the side of the wheels. Each leg spans five railroad tracks, two being under the machine and three under its cantilever. On the water side of the machine the boom extends to the farther side of the vessel, which permits more than one bucket to operate in the same hatch, and at the same time makes it possible to lift the buckets perpendicularly rather than at an angle.

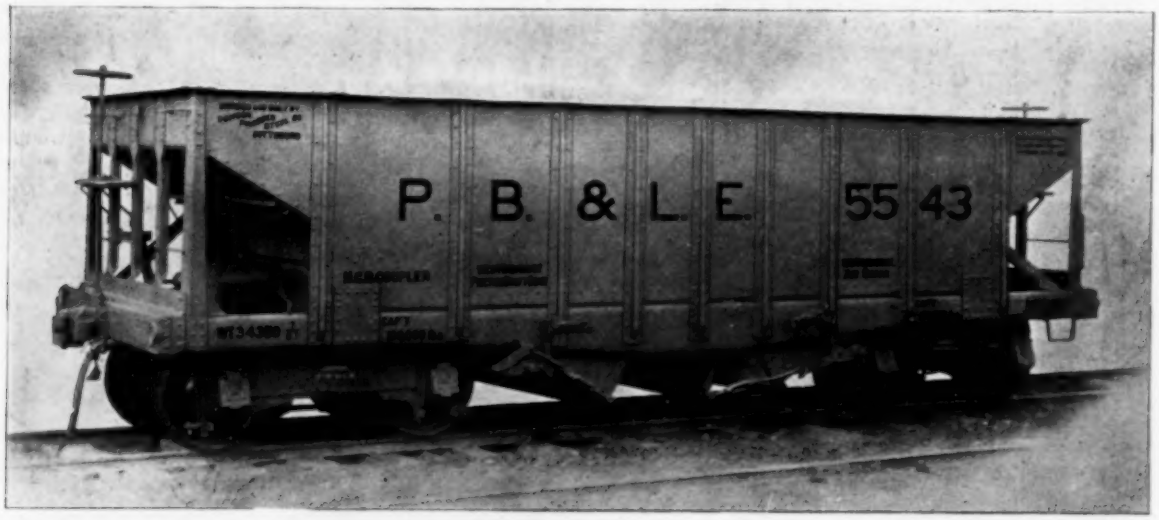


FIG. 5.—SCHOEN STEEL CAR, P., B. & L. E. RAILROAD.

The power for operating each machine is located in its central leg. The boiler and one engine are on one side and the two engines for the other legs are on the other side of the central leg, thus permitting the operator to see the bucket in every position when not in the hatch. The hoisting will be done direct from the crank shaft, no gearing being used. This insures less vibration and friction and the highest speed possible. The trolley can be stopped and lowered without going into a lock, at any point over the vessel's hatch. The buckets dump automatically at any height above the cars on any of the five tracks.

On the east side of the slip, opposite the McMyler ore unloader, is now being constructed by the McMyler Mfg. Co. a coal unloading machine. This will be completed when navigation opens. The Conneaut docks are under the capable management of Capt. E. Day, and in his hands the records of the coming season will be watched with interest.

Centering also at Conneaut a car ferry is operated by the United States & Ontario Steam Navigation Co., the other terminus being at Port Dover, on the Canadian side, a distance of 65 miles. Two boats 300 feet long, 54 feet beam, and 25 feet depth of hold are kept busy the year round, being equipped for cutting through ice. Each boat can accommodate 26 freight cars.

THE rate on pig iron from Mahoning and Shenango Valley points to Cumberland, Md., has been fixed by the Joint Traffic Association at $1.55 per gross ton; on wire rods from same points to Montreal and other Canadian points, $3.50 per gross ton; on pipe iron and pipe steel from and to last points named, $3.50 per gross ton.

GREAT BRITAIN'S NEED OF AMERICAN IRON.

There was a time when the Glasgow iron-warrant market was regarded as an infallible barometer of the trade of the country. That time is no more, and, strange to say, the warrant market has ever ceased to reflect the condition or to foreshadow the prospects of the iron trade itself. Those, therefore, who are moulding their opinion of the trade from the daily or weekly movements in warrants will find themselves woefully astray. The circumstances of the time are such that if the speculative spirit which used to characterize the iron ring were still existent, the price of warrants would be at least 10s. per ton higher than it is.

The dullness in the warrant market is no index of dullness in pig iron, but is simply due to the absence of the speculative element. The outside public have found more attraction for speculative investment elsewhere than in iron scrip. This has made it comparatively easy for those to "sit upon" the warrant market whose interest in finished iron is against any great or rapid rise in crude iron.

Assuming that we have no European war, and bearing in mind how industrial activity in one country stimulates industries in other countries, it is fair and reasonable to expect that as much crude iron will be taken away from us as last year. If that be so, then the total of deliveries for consumption this year will far exceed those of last year and be beyond all precedent. One has only to take a look at the shipbuilding trade—of which we give a summary view on Feb. 26—to see that this must be so. The requirements in all classes of iron and steel for shipbuilding purposes are already enormous, and are bound to increase as furthr additions are made during the year to our merchant fleets and the navy. We are aware that there is not quite so much activity in the making of railway material as last year, and that no new railway schemes of any magnitude are at all in evidence. But there is no reason to expect less than a normal demand all the year—not to speak of the infinite possibilities of China—and with even a normal demand for railway iron our consumption of pigs this year will greatly exceed anything ever yet seen.

Can we meet it? Last year we had to take 314,000 tons out of stocks and 100,000 tons from America to enable us to meet the home and foreign demand. The home consumption in 1897 was, in round numbers, about 600,000 tons more than in 1896, and the exports were 140,000 tons more. It is quite possible, therefore, that before the end of the year our present visible stock of a million tons will have disappeared, and a pig iron famine be in prospect.

The total make of the world was never so large as last year. The following shows the comparative outputs of the three greatest producers in the world:

Year.	United Kingdom. Tons.	United States. Tons.	Germany. Tons.
1891	7,228,490	8,280,000	4,640,000
1892	6,616,890	9,450,000	4,911,240
1893	6,830,000	6,657,000	4,962,120
1894	7,364,745	7,124,500	5,345,630
1895	7,895,675	9,157,000	5,431,000
1896	8,565,503	8,500,000	6,360,980
1897	8,609,459	9,652,680	6,889,067

The American make has been further increased since the beginning of this year. It is now at the rate of a million tons per month, and the total output for 1898 will probably exceed 12,000,000 tons. At first sight this suggests a large surplus for export; and, as a matter of fact, American pigs are still coming over to us—when suitable freight opportunities occur—in pretty much the same ratio as last year, while considerable quantities are being shipped direct from the States to the Continent. But competent authorities say that America has not yet developed her maximum requirements for iron and steel, and that when she does she will readily absorb the whole of this enormous output of pigs. And whatever comes out of the Cuban business, this is pretty certain—that it will create an era of iron shipbuilding in the United States such as never yet has been seen. The States, however, have not yet reached their maximum production of pigs, and it is quite within the range of probability that we may have some day, in the not very dim or distant future, to fall back on America to make good our deficient supply of crude iron—on America, once our largest buyer both of pigs and of finished material. No wonder the oldest men in the iron trade say that the experience of a lifetime affords them no guide in the new conditions which prevail in the world.—[London Statist.

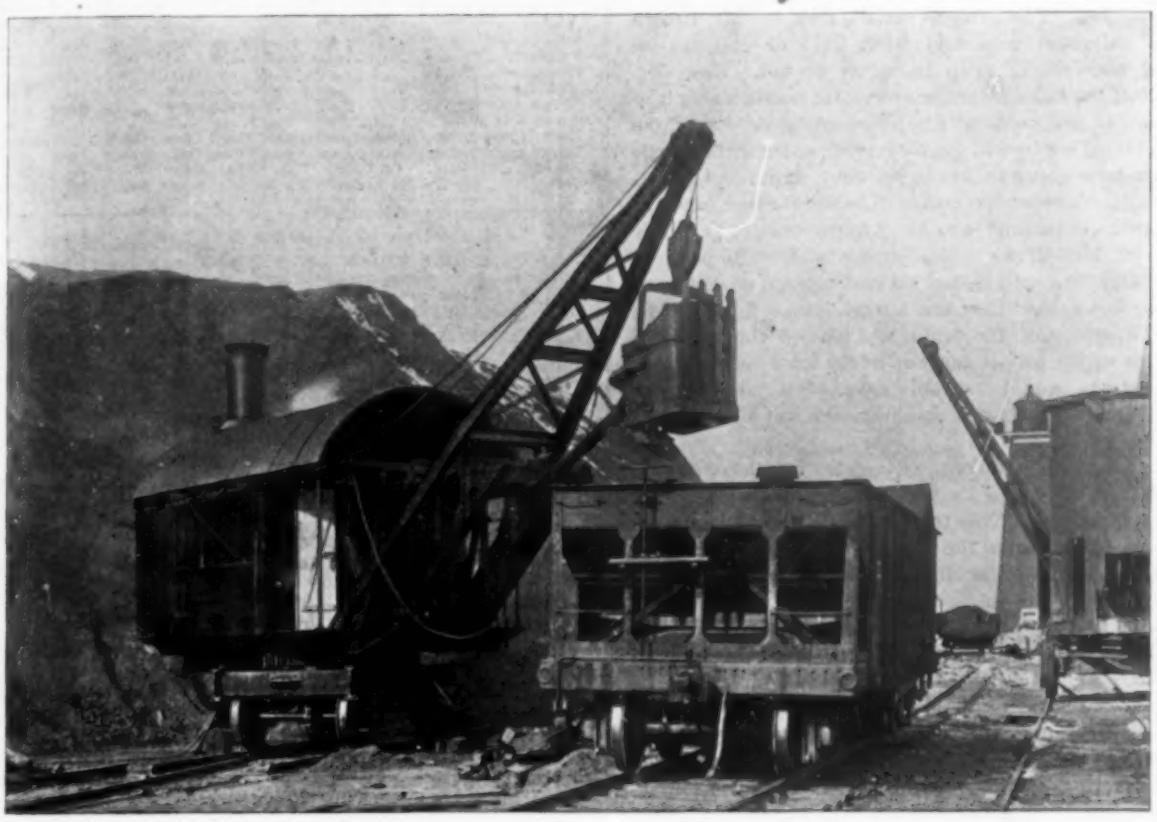


FIG. 7.—THEW AUTOMATIC SHOVEL, LOADING STOCK PILE ORE, CONNEAUT, O.

Jules Viennot, of Philadelphia, who for 20 years has conducted an agency for trade and technical journal advertising, died on March 11, aged 73. He was a native of Paris and came to the United States about 40 years ago. The beginning of his agency was his taking charge of the advertising of the Baldwin Locomotive Works.

FURNACE FACTS ABOUT FOUNDRY IRON.*

BY CHAS. W. FRIEND.

It gives me pleasure to read before you his evening a paper in which I try to set forth a few facts about foundry iron as seen from a manufacturer's standpoint.

I know from experience that a blast furnaceman is looked upon by foundrymen as little better than a robber, whose sole object is to get rid of his product, whether good or bad, without regard to how the iron will work for the poor foundry that receives it. Now, gentlemen, this is not so. The manufacturer to-day is trying his best to give the foundryman the best iron he can for his particular purpose. With this idea in view, manufacturers have employed chemists, and the more advanced furnaces have quit the old, haphazard practice of piling all iron together which happens to grade as No. 1, No. 2, No. 3, etc., when the chances are that the No. 1 is the hardest of the lot, and only fit to make rolling mill castings, while No. 2 or No. 3 is an ideal iron for making snap-flask work.

But, in many instances, the foundryman in buying his iron misrepresents facts to his own detriment. For example, a salesman goes to sell Mr. Brown, who is running a foundry (of course not in Pittsburg or vicinity) a car of iron. He tells him how soft his iron is, how much scrap it will carry, and all its good qualities. The price is satisfactory and Mr. Brown buys. The salesman asks him what kind of castings he makes, and how much scrap he wants to use. Now, Mr. Brown will not trust the manufacturer. He wants a soft iron to carry 20 or 30 per cent of scrap and make good machine castings, but thinking he will get something extra soft, he tells the salesman he is going to use 60 per cent scrap, and makes small castings. The order comes in to the furnace, and the iron is shipped, containing 3.70 or 3.80 per cent of graphitic carbon, which Mr. Brown tries to work with his 30 per cent good scrap, and the result is that his castings are so dirty and full of blow holes that they are a total loss; whereas, if he had told the salesman the truth, and trusted the manufacturer, an iron of the proper analysis would have been shipped him, his castings would probably have been just what he wanted, and the furnaceman would not have lost Mr. Brown's trade.

Another thing which makers of foundry iron have to contend with is high sulphur coke, which sometimes will get into the best run foundries. This coke looks all right, is from the same parties from whom the last lot was bought, and the foundryman knows nothing about it until his castings begin to come hard, and his shrinkage is away above what it should be. He is in trouble, and the first thing he does is to blame the iron. He may have three or four different brands in his mixture and, of course, he blames the iron which has the closest grain and looks hard, when the chances are that this is the softest iron in his mixture. He keeps changing his iron around with no better results until, in despair, he sends samples of his iron, castings, scrap, etc., to the furnaceman. These are analyzed. The castings are found high in sulphur, while the iron and scrap are all right; therefore the trouble must be with the coke. This is analyzed, the sulphur found, new coke used, and the foundryman gets good results.

As I said before, the foundrymen's practice of judging iron by the fracture often causes a great deal of trouble. It is easy for the furnace to make a No. 1 iron with 2¼ per cent silicon and .040 per cent sulphur, but it is a different matter to make open iron with 2¼ per cent silicon and .012 sulphur. To make low sulphur iron it is necessary to use a large amount of limestone in the ore mixture which takes the silicon as well as the sulphur out of the iron; and to get high silicon iron under these conditions it is necessary to work a blast furnace very hot. This requires more coke and closes up the grain of the iron. But tests which we have made time and again show that the low sulphur iron is by far the softer of the two. But what furnace is going to use more coke and more limestone per ton of iron produced and then make an iron which, although better, is not salable to many foundries?

This idea of close iron always being hard probably comes from the fact that in past years the old-fashioned blast furnace very seldom made iron which was close from being made at too high a temperature, but often made close iron with low silicon and very high sulphur, due to the furnace working too cold and irregular. This kind of iron would, of course, be hard and have great shrinkage.

Following is a series of tests which were made with the idea of determining iron of suitable analyses for various kinds of work. These tests were made by charging 1,000 pounds of pig iron in a regular 24-inch cupola operated as in the regular foundry practice. The iron was run into strips ⅛ inch and $\frac{3}{32}$ inch thick, the ⅛ inch stripes being 2½ inches wide and 24 inches long, the $\frac{3}{32}$-inch strips being 2 inches wide and 20 inches long, gated at one end and poured while in a horizontal position. By this means the relative fluidity and softness were determined. The tensile strength and transverse strength were determined by bars of standard cross section cast in pairs from one gate. All tests were made by the same set of men so as to get the personal factor as nearly uniform as possible. In the following tables where the word "soft" is used it is understood that all the strips were easily filed at the extreme end from the gate. "Medium" means that the ⅛-inch strips were soft and the $\frac{3}{32}$-inch strips hard. "Hard" means that all strips were hard. Under "Fluidity," "fluid" means all strips were fluid. "Medium" means the ⅛-inch strips ran out while the $\frac{3}{32}$-inch strips did not run out full. These particular tests were selected on account of the silicon analyses:

TABLE A, PURE PIG IRON.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10
Silicon.....	1.15	1.50	1.60	1.80	2.00	2.25	2.50	2.60	2.80	3.00
Sulphur.....	.010	.012	.014	.016	.018	.016	.020	.024	.030	.022
Phosphor's	.60	.56	.55	.61	.55	.54	.61	.60	.51	.60
Manganese	.50	.52	.49	.45	.90	.50	.70	.45	.80	.35
Graph. Car.	3.60	3.10	3.20	3.40	3.0	3.70	3.30	3.80	3.50	3.70
Comb. Car..	.12	.35	.30	.25	.14	.12	.18	.16	.10	.06
Tensile Str.	16000	19300	15000	24000	18000	17000	18000	16000	15500	14500
Trans. Str..	1800	2100	1700	3000	1800	1700	2000	1500	1600	1400
Fluid.....	Flu.	Flu.	Flu.	Flu.	Flu.	Flu.	Flu.	Flu.	Flu.	Flu.
Soft.....	Soft.	Med.	Soft.	Hard	Med.	Soft.	Soft.	Soft.	Med.	Soft.

TABLE B.

Same iron with 30 per cent good machinery scrap.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10
Softness.....	Soft.	Med.	Soft.	Hard	Hard	Soft.	Med.	Soft.	Med.	Soft.
Fluidity.....	Flu'd	Flu'd	Flu'd	Flu'd	Flu'd	Flu'd	Soft.	Flu'd	Flu'd	Flu'd

TABLE C.

Same iron with 60 per cent. good machinery scrap.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10
Softness..	Hard	Hard	Med.	Hard	Hard	Soft	Soft	Soft	Med.	Soft
Fluidity	Flu'd	Flu'd	Flu'd	Flu'd	Flu'd	Flu'd	Flu'd	Flu'd	Flu'd	Flu'd

Note that test No. 1, Table A, with silicon 1.15 per cent, was both soft and fluid. This is due to the high graphitic carbon and low combined carbon. Other tests made with low silicon, low graphitic carbon and high combined carbon being fluid, but hard. As seen in Tables B and C, this iron was soft with 30 per cent scrap, but hard with 60 per cent. Test No. 2, with 1.50 silicon, illustrates the effect of high combined carbon with low graphitic carbon. No. 4 shows high tensile and transverse strength. No. 5 shows the effect of high manganese, also the comparatively low graphitic carbon lessens its value as a scrap carrier. It would be interesting to see how much scrap an iron like No. 10 would carry. In fracture this iron was light colored and very close grained. The test bars and strips were uniform, close gray castings, with no apparent difference between that with 30 per cent scrap and 60 per cent scrap.

To sum up these tests, it might be said, to obtain a soft iron on a basis of 1.50 per cent silicon the sulphur must be very low, the graphitic carbon high and the combined carbon low. As the silicon increases, the sulphur may increase slightly without noticeable result. For scrap carrying purposes the graphitic carbon should be high, with enough silicon to keep the carbon in that state. The sulphur should be as low as possible, for it should be remembered that under ordinary conditions the oftener iron is melted with coke the more sulphur it takes up. For fluidity we must look to the phosphorus, for to this element more than any other fluidity is due, and as the silicon increases so must the phosphorus, to obtain the same fluidity.

At one time, after the furnace was coked down on a Bessemer mixture, we made, in starting, iron containing 8½ per cent silicon and 3.80 per cent graphitic carbon. We were going to put the iron through the furnace again when a foundryman happened along and saw it. He insisted it was just what he wanted, and took away a load to try. It melted all right in the cupola, but was so thick he had trouble pouring it out of the ladle, and, of course, it would not run in his molds. If this iron had contained 1¼ per cent or 1½ per cent phosphorus it would have been fluid enough to make the finest castings.

*Read before the Pittsburg Foundrymen's Association, March 28, 1898.

THE BARAGWANATH CONDENSER.

This condenser, the construction of which is shown in the accompanying illustrations, is applicable to any purpose for which a vacuum is required. It is set at a height of 34 feet above the hot-well, which is sufficient to clear itself of its discharge water and air by gravity alone. No air pump is required. It has already been described, but we show herewith its application as connected with a cooling tower and also with a vacuum kettle. Fig. 1 illustrates these condensers and the water cooling tower at the Hyde Park Electric Co.'s plant. The tower is 60 x 20 feet in area and has 20 floors, 12 inches apart. This cooling device makes it possible for any plant not convenient to a body of water to be run condensing if desired, and it is sometimes resorted to as an actual economizer of water, all the condensation from the engine being available for boiler feeding, which in case of scarcity or bad quality of feed water, is sometimes a desirable end. The actual additional supply needed is only about 10 per cent of the amount fed to the boilers, this quantity being lost in evaporation, leakages and waste. Fig. 2 shows the condenser used with a vacuum kettle, where it secures and maintains a steady vacuum of 28 inches, which is all that is required.

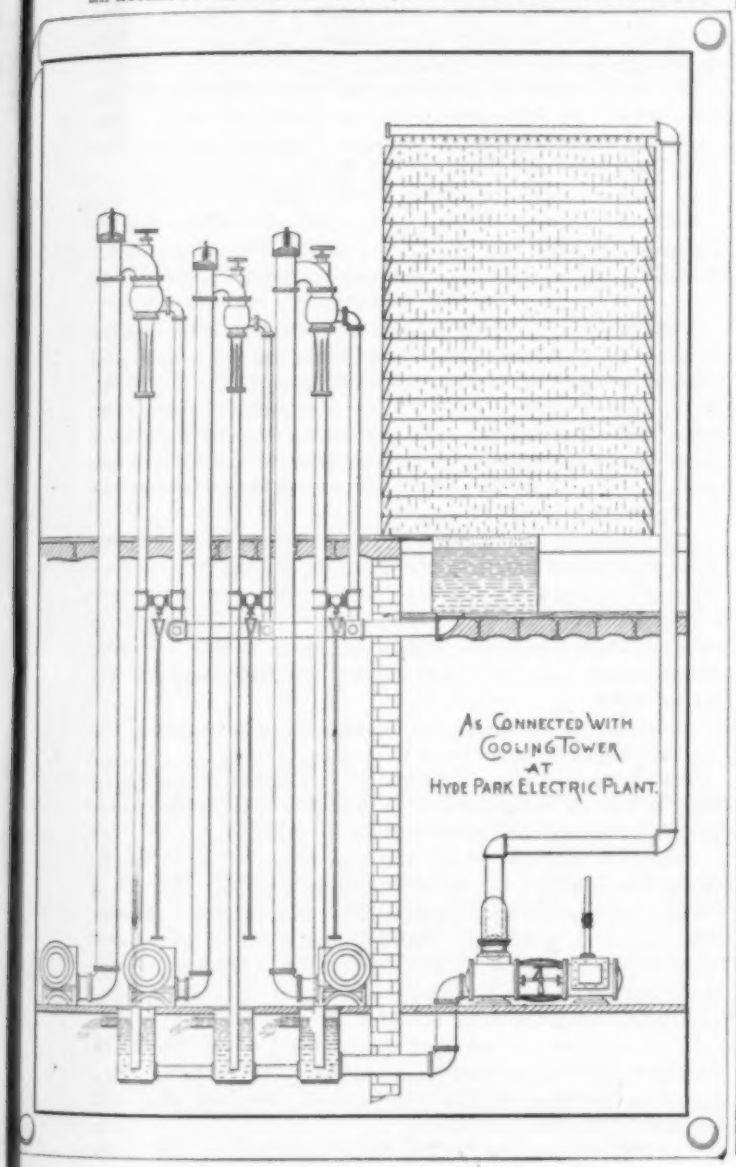


FIG. 1.

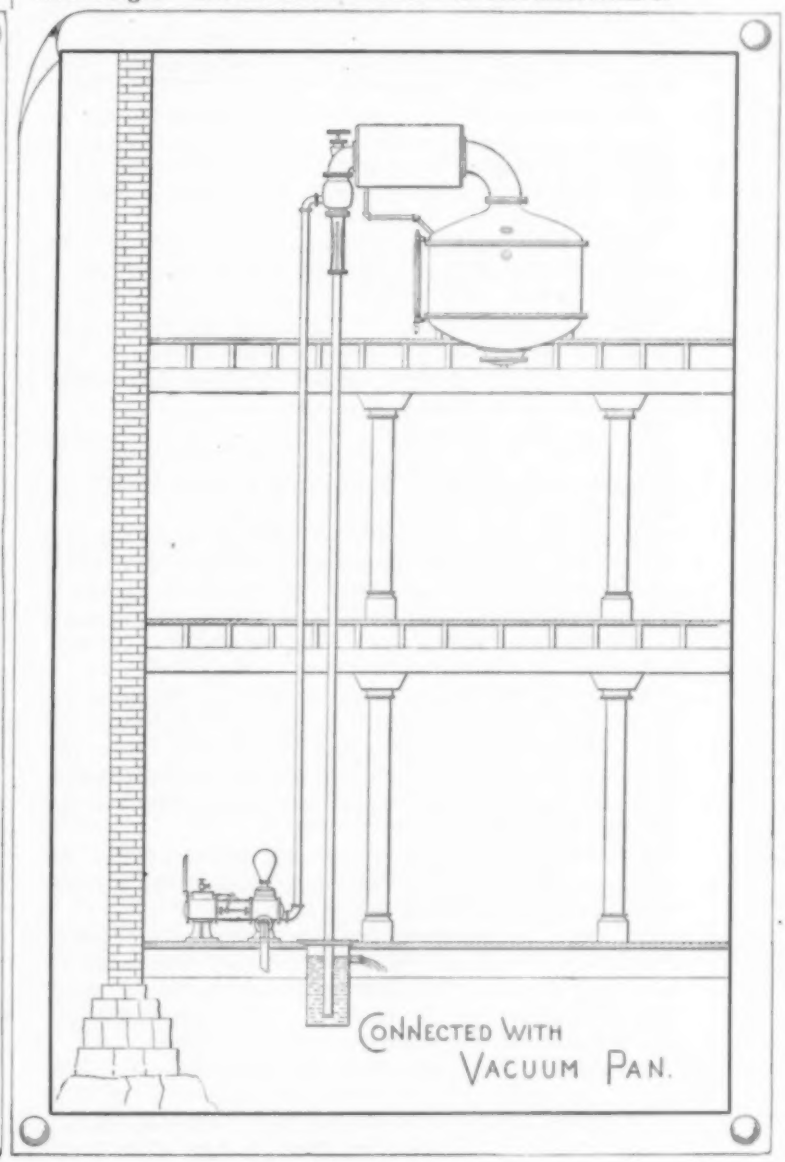


FIG. 2.

The manufacturers, Wm. Baragwanath & Son, 48 to 52 West Division st., Chicago, have recently printed a pamphlet describing their condensers.

Cost of Steel and Wooden Freight Cars.

In figures recently made public by Chas. S. Schoen, of the Schoen Pressed Steel Co., Pittsburg, steel and wooden freight cars are compared in respect to first cost, cost of maintenance, durability and weight. Mr. Schoen compares a 30-ton wooden car and a 50-ton steel car, including interest and cost of maintenance for the life of each car. The cost of repairs is averaged at $40 per year for the wooden car, and at $20 per year for the steel car throughout a life of 15 and 30 years, respectively. He takes the first cost of the wooden car at $525, to which he adds interest and cost of repairs for 30 years. He sums up a cost of $106.50 during the life of the wooden car, or $5.55 per year per ton carrying capacity. Then he takes a modern steel car at a first cost of $810, allows the same rate of interest, and provides for repairs. From this he figures a cost of $95.60 per year during the life of the steel car, or $1.91 cost per year per ton carrying capacity. He estimates the difference in the cost per year per ton carrying capacity in favor of steel cars at $1.64, which is equal to 46.2 per cent.

Another advantage claimed for the steel car is the saving of dead weight. The estimate made assumes that train loads of 1,500 tons of paying freight are hauled, and that the wooden car weighs 16½ tons and the steel car 17 tons. To haul 1,500 tons, 50 wooden cars are required, weighing 825 tons. To haul the same amount of freight 30 steel cars are required, weighing 510 tons. Thus the dead weight saved for train load in favor of steel cars is 315 tons. If 500 steel cars are used it will give 16⅔ full trainloads, which multiplied by 315 (tons of dead weight saved per train), gives 5,250 tons of paying freight gained for each run of the 500 steel cars.

The great eight-track swing bridge over the Chicago drainage canal, placed under contract by the canal trustees some time since, will not be built. The railroad companies who will use the bridge have objected to combining so many tracks in one structure, and insist on a sectional bridge, so that an accident to one part will not interfere with traffic on the other parts. A rolling or sliding bridge will probably be adopted without a center pier. The work will be readvertised.

INDUSTRIAL SUMMARY.

New Buyers in the Market, and Some of Their Wants:—

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

"Southern," care *The Iron Trade Review*, 1142 Monadnock Block, Chicago, wants the address of concerns making 4-strand braided wire for fencing.

The Detroit Union Bridge Co., organized with a capital of $2,000,000 for the purpose of constructing a bridge three miles long over the Detroit River at Detroit, has filed articles of incorporation with the Secretary of State, at Lansing, Mich., paying a franchise fee of $1,000. The incorporators of the company are Henry B. Joy, Allen Sheldon, Theodore D. Buhl, T. H. Newberry, R. P. Joy, James Joy, E. W. Meddaugh, W. W. Crapo, C. M. Hayns, Joseph Ramsey, Jr., Walls N. Blodgett, O. D. Ashley, the Canadian Grand Trunk Railway Co., and the Wabash Co.

The Simington Mfg. Co. has been incorporated at Austin, Texas, to manufacture seed cotton distributer and feeder machinery. The capital stock is $40,000, and the incorporators are C. M. Simington, W. H. Thaxton, W. H. Taylor and D. M. Crosthwait.

M. Zier & Co. has been incorporated at Albany, Ind., with a capital stock of $25,000, to operate a foundry and machine shop.

The Reilly Steam Pump Co., Louisville, Ky., has been incorporated by J. J. Reilly, George A. Somerville and Edward Graupin. The capital is $50,000, and it is proposed to manufacture and handle steam pumps and pumping machinery.

The Lone Star Engine Boiler Works has been incorporated at Greenville, Texas. The capital stock is $50,000, and the directors are J. Byrd, L. N. Byrd, T. E. Byrd, C. A. Duck and A. E. McGary.

The Laramie Iron & Seel Co., of Laramie, Wyo., has been incorporated to succeed the Laramie Rolling Mill Co. in the operation of the Laramie rolling mill. Hon. Otto Gramm is the president of the new corporation, which will at once put in new machinery and largely increase the output of the institution.

An electric light plant is to be installed at Columbus, O., for which material is wanted. Bids will soon be closed for two compound condensing engines of 125 h. p. each; two water-tube boilers, 150 h. p. each; two 100 h. p. impulse or turbine water wheels, etc. James A. Fanning is clerk of the Board of Public Works.

A 50 h. p. gas or gasoline engine will be installed in the new grain elevator of the Commercial Milling Co., Detroit, Mich., and propositions are being received.

Efforts are being made to organize a company in Detroit, Mich., for the manufacture of iron and steel, also coke by the Solvay process. It is stated that Wm. Gerhauser, secretary of the Union Iron Co., has been asked to effect an organization and to become general manager.

Mead & Coe, of Chicago, Ill., are in the market for a 12 to 15 h. p. gas engine.

The idle rolling mill at Muskegon, Mich., will soon resume operations under the name of the Michigan Iron & Steel Co. Amended articles of incorporation increasing its capital stock from $50,000 to $150,000 have been filed.

The Whitely Mfg. Co., of Camden, N. J., has been incorporated to produce metal goods of all descriptions; capital, $300,000. Corporators, William N. Whitely, of Springfield, O.; William T. Stillwell, of Baltimore; John R. Williams, Merchantville, N. J., and W. N. Gibbs, and George S. Graham, of Philadelphia.

The Potts Valley Iron Co., of Columbus, O., has been incorporated by R. W. McCoy, C. E. Ellis, R. K. Ramsey, J. W. Keegan and C. C. Morton, all of Columbus, with a capital stock of $50,000.

The F. C. Austin Mfg. Co., Chicago, Ill., is in the market for a 72-inch boring mill and a 10-ton locomotive traveling crane.

A charter was last week issued by the State department of Pennsylvania to the Duquesne Galvanizing Co., of Pittsburg. Capital, $20,000. Directors, F. K. McCanel, W. T. Melduch, C. S. Clark, R. O. Miller, and J. D. Hailman, of Pittsburg.

The Lancaster Malleable Iron Works, of Lancaster, Erie Co., N. Y., have been incorporated; capital, $150,000. Directors, Clarence E. Rood and Eugene Chamberlain, of Buffalo, and William Brownell, of Lancaster.

New Construction:—

It is reported that the Godman Brake Co. will erect a plant at Anderson, Ind., in the near future.

The factory of the Western Hardward & Mfg. Co., to be built in Milwaukee, Wis., near the Filer & Stowell foundry and machine shop, will be quite extensive. The main building, and the warehouse, in which the office is also located, will be five stories and about 60 feet in height. It will cover ground 165 x 58 feet. The machine shop will be 160 x 48 feet in size, the enameling and finishing department 144 x 48 feet, the foundry 150 x 100 feet, and the power house 60 x 60 feet. The buildings will cover a section 280 x 400 feet and will be of brick. The company manufactures iron and brass bedsteads and gasoline and gas stoves.

The Morse Wool Treating Co. has just completed at Norton, Mass., an extensive plant for purifying wool. The buildings are of substantial character, entirely fireproof, and were designed and built by the Berlin Iron Bridge Co., of East Berlin, Conn. The floors throughout the plant are of beams and corrugated iron arches, to carry the heavy loads common to warehouse construction. The roofs are of the Berlin Iron Bridge Co.'s patent anti-condensation corrugated iron.

The Berlin Iron Bridge Co., of East Berlin, Conn., has the contract for building a new power house, car barn and steel bridges for the Port Jervis Electric Railway Co., Port Jervis, N. Y. The buildings will be of a substantial character, entirely fire-proof, covered with the Berlin Iron Bridge Co.'s patent anti-condensation corrugated iron. The bridges are plate girder type, substantially constructed for carrying the heaviest loads.

Eight acres of land at Sherman and Forest aves., Norwood, Cincinnati, were bought last week as the site for the Bullock Electric Co.'s new plant.

At Pittsburg, the erection of the P. & L. E. Railroad train shed will soon begin, the Schultz Bridge & Iron Co. securing the contract. The building will be 500 feet long and six tracks wide.

At Lyons, N. Y., the Lyons Foundry Co. has bought a site and will begin the erection of a foundry at once.

The Chicago, Burlington & Quincy is building a new spring shop at Aurora, to be 36x70 ft., at which will be made and repaired all the locomotive springs for the road.

Bids have been opened for the new shops of the Chicago Great Western Ry., Ia., to be built at Oelwein, Ia. They will cover about 180,000 sq. ft., and will be built of brick and steel. Contracts for plumbing, heating, and electric power and water-works will be let separate from the contracts for the buildings. The work is under the direction of H. Fernstrom, chief engineer of the road, St. Paul, Minn.

It is stated that a bonus of $10,000 and subscriptions of $20,000 in stock have been guaranteed by the Sharon, Pa., Board of Trade to a newly organized company who will build a tin plate mill at Sharon.

The Riter-Conley Co., of Pittsburg, has contracts for building three illuminating gas plants: One at Toledo, O., one at New Bedford, Mass., and one at Lockport, N. Y.

Estimates are being taken on the large steel plant to be erected at Birdsboro, Pa., for the Schuylkill Valley Steel Co., 102 Walnut st., Philadelphia. It will be brick and iron, one and one-half stories and basement, and will be equipped with the very latest improved machinery for hoisting, sliding, beating, etc. It will have several furnaces and forges. Cost, $200,000.

A new sheet mill is in contemplation at Dresden, O., provided a bonus of $20,000 is offered.

The Enterprise Boiler Co., Youngstown, O., has the contract for the construction of the new 20x100-ft. furnace for the Oliver-Snyder Iron & Steel Co., in Allegheny, adjoining the present Edith furnace. The latter will be used as a dust catcher.

A company, headed by A. Cochrane, of Leechburg, Pa., are planning for a new plant at New Kensington, Pa., for the manufacture of chilled rolls. No site has been selected as yet.

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HARRISON SAFETY BOILER WORKS, Columbia Station, PHILADELPHIA, PA.

Additions, Enlargements, Removals, Etc.:—

Ketcham & Co., Paris, Texas, manufacturers of iron columns, lintels and general structural work, intend to rebuild their principal shop in the fall and also erect a building for the manufacture of engines and boilers.

The F. C. Austin Mfg. Co., of Chicago, whose road scraper factory was recently burned, is to remove to Harvey, Ill., where it will occupy the buildings formerly used by the Harvey Steel Car Co.

The Munson Co., builder of horseless vehicles, has removed from Chicago to La Porte, Ind., where it has been furnished with a factory building by the city.

A malleable iron foundry is a contemplated addition to the plant of the Missouri Car & Foundry Co., at Madison, Ill.

The Louisville & Nashville Railroad has received bids for enlarging its machine shops at Decatur, Ala.

The Board of Trade manufacturers' committee, of Columbus, O., is working to secure the location of Mitchell, Tranter & Co.'s rolling mill, which may remove from Covington, Ky.

Fires and Accidents:—

The plant of Albert V. Seydell, manufacturer of architectural iron, at 527-29 McLean ave., Chicago, was damaged $3,000 by fire.

At Lawrence, Kas., the boiler room, machine shops, and engine house at the Kansas University were burned March 22. The loss is $40,000, with no insurance. The electrical engineering machinery and apparatus cannot be replaced until the Legislature meets.

At Elgin, Ill., fire destroyed part of the Illinois Iron & Bolt Co.'s works.

At Amherst, N. S., the foundry and machine shops of Rhodes, Curry & Co.'s car works burned. Loss, $45,000.

Loss by fire and flood to the Craig-Reynolds Foundry Co., of Dayton, last week, amounted to $10,000. The works were flooded by high water which reached some calcic carbide packing. Acetylene gas was formed and exploded, a fierce fire resulting.

At Chicago, fire in the Schoeneman Bldg. caused a loss of $140,000. Thos. Wrigley's machine shop suffered a $2,000 loss; insurance, $1,200.

Part of the foundry of P. P. Mast & Co., Springfield, O., was washed away by flood last week.

General Industrial Notes:—

The Montpelier Steel & Sheet Co. will be the name under which a co-operative establishment is to be conducted at Montpelier, Ind. The authorized capital stock is $100,000, and the product is to be copper, brass, lead and steel sheets.

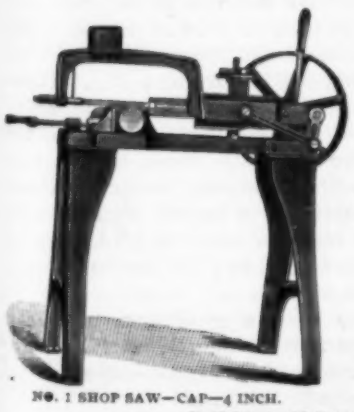
The Franklin Steel Casting Co., Franklin, Pa., manufacturer of steel castings of all descriptions up to 60,000 pounds in weight, also maker of the Lone Star automatic coupler, is now proceeding with the preliminary details for casting two of the largest generators ever manufactured or installed in the United States. Each will require 80,000 pounds of metal of special analysis, of high electrical permeability. This concern has the contract for installing the large gear detail for the power house of the Consolidated Traction Co., at Pittsburg. It has just placed the contract for another iron and steel building, 150 x 50 feet, for core and flask department, together with 10-ton 3-motor traveling crane.

The second Colebrook Furnace, at West Lebanon, Pa., was blown in on March 21. The furnace is leased by the Lackawanna Iron & Steel Co., of Scranton, Pa., and is the fourth furnace in the vicinity the company have put in blast the past two months.

The anthracite blast furnace at Temple, Pa., was blown in March 21, after being idle nearly two years. It is expected that the furnace will yield about 100 tons daily.

A South Bend, Ind., dispatch reports recent pig iron orders by concerns there, aggregating 8,500 tons.

"THE BEST IS AS GOOD AS ANY" TRY THEM!



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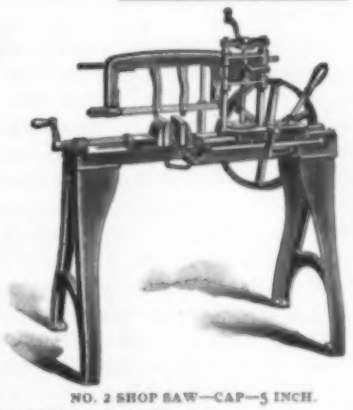

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MOUNT SAVAGE FIRE BRICK.

UNION MINING CO.,

Proprietors of the CELEBRATED Mount Savage Fire Brick

GOVERNMENT STANDARD.

Established 1841. Capacity, 60,000 Per Day; 18,000,000 Per Year.

The First Manufactory of its Kind in the U. S.

Home Office and Works:—**MOUNT SAVAGE, Alleganv County, Md.**

Branch Offices:—No. 1 Broadway, New York, N. Y.; No. 222 So. Third St., Philadelphia, Pa.; Ferguson Block, Pittsburgh, Pa., Stowe, Fuller & Co., 195 Merwin St., Cleveland, Ohio.

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"OTIS" FIRE-BOX PLATES A SPECIALTY.

Flange Plates, Ship Plates, Tank Plates, Steel Car Axles and Forgings of all kinds.

Steel Castings from 100 to 75,000 lbs.

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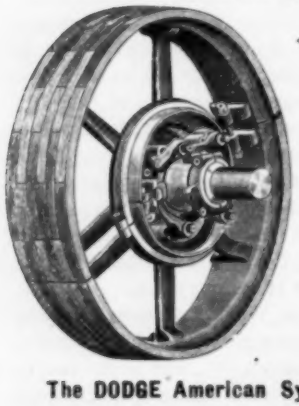
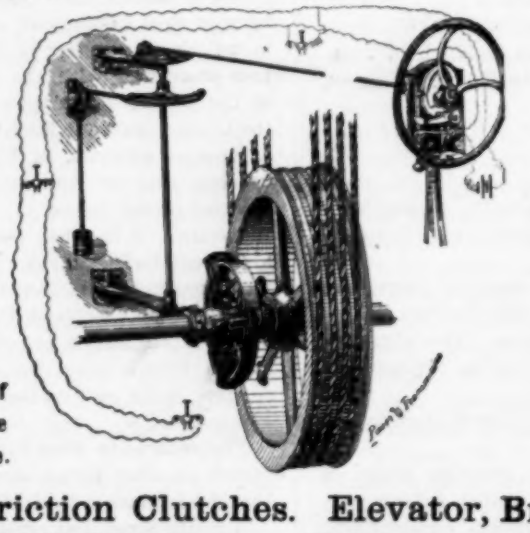
ST. LOUIS, 516 N. Third St. WASHINGTON, Kellogg Bldg.
MONTREAL, J. G. Sibbald, 3 Windsor Hotel.
SAN FRANCISCO, John Woodlock, 26 Beale St.

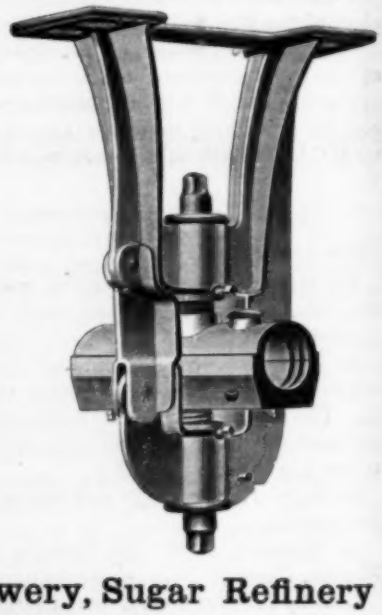
RICE MACHINERY CO., 166-174 South Clinton St., Chicago.

Engineers, Founders and Machinists.

Telephone 4448 Main.







The DODGE American System of ROPE Transmission. Complete Plants Furnished. Try Indurine.

Shafting, Hangers, Friction Clutches. Elevator, Brewery, Sugar Refinery and Oil Mill Machinery, Belting and Mill Supplies.

GENERAL AGENTS FOR THE DODGE INDEPENDENCE WOOD SPLIT PULLEYS.

The puddling department of the Pottstown, Pa., Iron Co., recently leased by the Glasgow Iron Co., has been put in operation.

The S. Obermayer Co., Cincinnati, O., and Chicago, Ill., manufacturer of foundry facings and foundry supplies and foundry equipments, reports business much better than the first part of last year. The company has added a new department to its large business, and having secured the services of a foundry equipment expert is now in a position to figure with parties on the entire building of a brass or iron foundry, from the ground up, completing it with the latest and most improved equipments. The S. Obermayer Co. will also furnish plans of foundries showing the most economical plans of operating them. It is a large importer and refiner of East India plumbago or silver lead or graphite.

The stock column of a Chicago paper says: "The American Steel & Wire Co.'s stock is to be listed on the New York Exchange, but it will probably not be done until steel engraved certificates are issued, which may delay it for two months. The company will have $12,000,000 preferred and $12,000,000 common stock, but its friends insist it is not capitalized as heavily as the Glucose or the Biscuit company relative to the value of its property and its earning power. They predict that common stock will ultimately pay 10 per cent, and a wager has been made that common will sell at par within 18 months. These are optimistic views, but it must be remembered the Consolidated company, which furnishes seven of the 14 plants to be absorbed in the new concern next month, earned 31½ per cent last year on a capital of $4,000,000, or $1,260,000. That sum would pay 7 per cent on $6,000,000 preferred and 14 per cent on $6,000,000 common stock. It is probable the public will not have an opportunity to invest in much of this stock, except at fancy figures, as it is said only about $2,000,000 preferred and $2,000,000 common was offered for subscription by outside interests."

Excavation has begun for the new slab mill of the Illinois

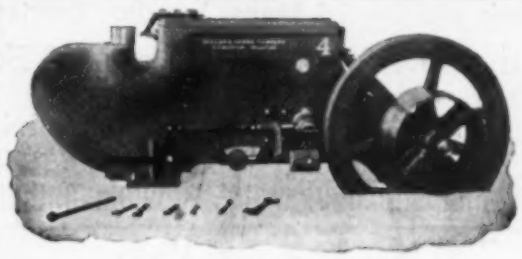
U. BAIRD MACHINERY CO.,

123-125 Water St., **PITTSBURG, PA.,** 124-126 First Ave.

Machine Tools and Supplies. Send for list of Second-hand Tools.

Persistence In Advertising

Is one of the requisites of satisfactory results. In the expansion of business which is now noticeable in every section of the country, advertisers who have made themselves regularly prominent in the past two years will be first to reap the rewards of persistent publicity.



NO. 4 HORIZONTAL PUNCH.

The illustration shows an improved horizontal punch designed for heavy work. The die is held in a forged steel stake which is keyed solidly through the nose. Small diameters and irregular pieces are very easily handled on this machine.

Send for new CATALOGUE.

HILLES & JONES COMPANY,
908 Church Street,
WILMINGTON, DELAWARE.

PUNCHES AND SHEARS

OF ALL KINDS

MANUFACTURED BY

The Long & Allstatter Co.,

HAMILTON, OHIO.

Send for catalogue.

When you write to firms advertised in our columns, please mention the fact that you took their address from our paper. They will thank you for it.

Steel Co., at South Chicago. The Laidlaw-Dunn-Gordon Co. has the contract for the pumping outfit for the new plant.

The Schoen Pressed Steel Co., of Allegheny, has been incorporated in Illinois, with a view to facilitating the company's business in that State.

Arrangements are being made to start the puddling mill at the Springfield (Ill.) Iron Co.'s plant.

The Andrews & Hitchcock Iron Co., Hubbard, O., has purchased several acres of land adjoining its furnace plant, to enlarge its yards. The stockhouse will be raised, as well as the trestles running into it.

The Baldwin Locomotive Works are turning out an average of 15 engines a week.

The Sharon Iron Co., Sharon, Pa., has granted a 10-cent increase in wages to laborers, or from $1.15 to $1.25.

At the Missouri Furnace Co.'s stack at St. Louis, 60 laborers struck against monthly pay-days. The superintendent says that semi-monthly pay-days have been the rule, but the change was made as a matter of self-protection, it being impossible to get the men to work three or four days after payday.

At Middlesborough, Ky., improvements are being made with a view to putting furnace No. 2 in blast.

The old Amos Whiteley Company shops at Springfield, O., are busy. The pattern department is occupied on new model cellulose-shiving machines and improvements on the Whiteley universal harvester. The foundry is being made ready to start.

The plant of the Nordyke & Marmon Co., at Indianapolis, is running full time. The capacity of the roll corrugating department has been increased by installing a modern corrugating machine, built by the Pratt & Whitney Co., of Hartford, Conn.

Work on the new plate mill at the LaBelle Iron Works, Wheeling, is making good progress and some of the machinery has been put in place.

The Aultman & Taylor Machinery Co., Mansfield, O., manufacturer of the well-known types of Cahall vertical water tube boiler and Cahall-Babcock & Wilcox water tube boilers, has recently secured valuable additions to its erecting force in the persons of W. E. Bickford and J C. Cooke. Mr. Cooke has been located in the Philadelphia district for the past six years as superintendent of erection for the Babcock & Wilcox Co., of New York. The Cahall interest is to be congratulated on securing the services of Mr. Cooke, and his friends will be glad to learn that taking charge of the Cahall erecting department in Philadelphia and New York means substantial advancement for him. Mr. Brickford has been superintendent of erection for the National Water Tube Boiler Co. for the past five years, and recently resigned that position to accept a position as erecting superintendent for the Cahall boiler, with headquarters at Mansfield, O.

Employes of the crucible department of the Aliquippa Steel Co., at Aliquippa, Pa., have been granted a ten per cent advance in wages, to date from March 21.

Contracts for disappearing gun carriages for the Government were let on March 25 to the Walker Co., Cleveland; the Morgan Engineering Co., of Alliance, and the Niles Tool Works, of Hamilton, O. The Niles Tool Works are running up to 9 p. m., and 1,000 men are employed, 250 more mechanics than heretofore. The company has had for some time on hand contracts for disappearing gun carriages and 12-inch mortars.

The Johnson Coal Mining Co., producers of Pittsburg coal from Arnold Ridge mines at Fayette City, Pa., has established Pittsburg offices in Rooms 604 and 605 Park Bldg., in charge of A. J. Lawrence, general sales agent.

The Westinghouse Electric & Mfg. Co., of Pittsburg, has declared the regular quarterly dividend of 1¼ per cent on the prerredfe stock, payable April 1.

The employes of the Carrie Furnaces at Rankin, Pa., have been notified by President H. C. Fownes of a 10 per cent increase in wages on April 1. The furnaces will be transferred to the Carnegie Steel Co., Ltd., on May 1, and the advance is

INLAND IRON & FORGE CO.,

Marquette Building, CHICAGO, Manufacturers of

BAR IRON AND STEEL,

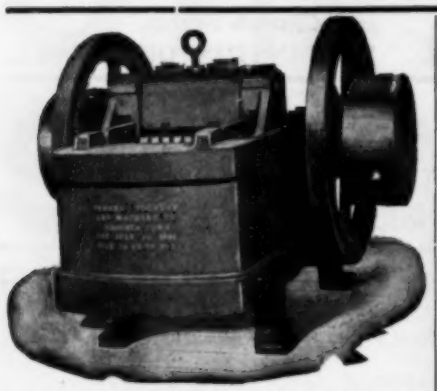
Angles, Channels and Special Shapes for Car, Carriage and Wagon Work.

Iron and Steel Car Axles and Forgings.

Works, EAST CHICAGO, IND.

(Formerly owned by East Chicago Iron & Steel Co.)

IT PAYS to advertise in The Iron Trade Review.



THE FARREL (Blake Pattern,) (Ore and Rock.)

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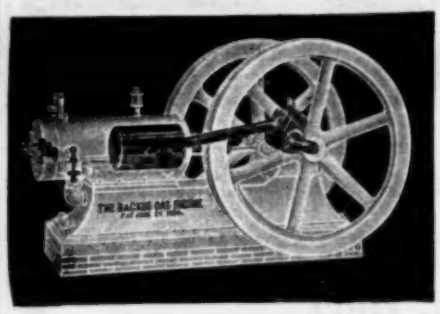
STANDARD OF THE WORLD.

Farrel Foundry and Machine Co.,

EARLE C. BACON, Engineer,

Havemeyer Bldg., NEW YORK.

Backus Gas and Gasoline Engines.



FOR SALE BY

BAIR & GAZZAM MFG. CO.,

Pittsburg, Pa.

HOME OFFICE:

BACKUS WATER MOTOR CO.,

Newark, N. J.

The Brown GAS AND GASOLINE Engine.

Uses Gas or Gasoline. Makes no compression while engine is running idle. Charges fired with electric spark tube igniter. Made upon honor and fully guaranteed. Write for description and prices.

Columbus Machine Co.,

COLUMBUS, O.

made to conform to the scale of wages paid at the Edgar Thomson furnaces.

The Ætna Standard Iron & Steel Co. has placed a contract with Gordon, Strobel & Co., of New York, for four hot blast stoves.

A rush order was received at the Homestead Steel Works recently for 25 tons of ship plate, to be shipped to the Brooklyn Navy Yard, to be used on the steam yacht Mayflower. The plates were in the hands of the railroad and en route to the Brooklyn Navy Yard in 12 hours after the receipt of order at the works.

The furnace and ore properties of the Coplay Iron Co. in Lehigh and Northampton counties, Pennsylvania, including three blast furnaces, were sold last week, under foreclosure of mortgage to the bondholders, for $55,000.

H. K. Porter & Co., of Pittsburg, has received an order to build one small locomotive for the Government. It is understood that it is for use at the Brooklyn Navy Yard.

The Pittsburg office of the National Foundry & Pipe Co., of Scottdale, Pa., will be removed next week from the Lewis Block to Nos. 403 and 404 Murtland Building.

There is talk of two sheet mills being put in the Coleman-Shields Co.'s mill, at Niles.

The Andrews Bros. Co., of Youngstown, is building a laboratory. It will be of brick and stone.

The rolling mill at Hubbard, O., is being dismantled. Everything of value is being taken to the plant of the Mahoning Valley Iron Co., at Youngstown.

The Davis & Egan Machine Tool Co., of Cincinnati, has received in the past week a number of large orders for machine tools through its office at Berlin, Germany. Among them is one from the Baeureuther Maschinen Fabrik at Bauereuth, near Duesseldorf, for a number of upright drill presses, radial drills, 36-inch lathes, and bolt cutters. This company is one of the largest manufacturers of electric cranes and hoists in Europe. An order has been received, also, from the Locomotive Fabrik Maffei, at Munich, Germany, for a number of large engine lathes.

The Lackawanna Iron & Steel Co. blew in its No. 2 Coebrook furnace at Lebanon, last week, and now has five stacks in operation in the Lebanon Valley region. The furnace has been practically rebuilt in the last two years and new machinery installed.

The machine shops of the Robert Poole & Son Co., at Woodberry, Baltimore, are at work on a large order from Moscow, Russia, for machinery for a brass and copper rolling mill.

Recent sales of Cambria Iron Co. stock were at an advance.

Recent experiments at the four coke ovens of the Ashland (Ky.) Coal & Iron Co. in which the company's Coalton coal was used have been quite satisfactory and other ovens will be built. Similar experiments by E. J. Bird, Jr., of Ironton, O., on the opposite side of the river, using Lawrence County coal, have proved satisfactory.

At Oswego, N. Y., Jones & Galvin have leased the Holbrook foundry and will manufacture brass and iron castings.

A number of Muncie, Ind., iron and steel workmen, headed by Chas. Kennedy, have made an arrangement with the board of trade at Montpelier, Ind., to operate a rolling mill plant there on the co-operative basis. At Muncie, Ind., iron workers are organizing to take the old Florence Iron & Steel Co.'s rolling mill at Muncie, now in the hands of Bassett and others of Cleveland, O., creditors of John D. Briggs.

At Kansas City, Mo., the Merchant Iron Rolling Mill will be organized at once for the manufacture of wagon tires, nuts and bolts and railroad materials from scrap iron.